U.S. Army Research Institute
for the Behavioral and Social Sciences

Research Report 1820

Assessing the Effectiveness of the Close Combat Tactical Trainer

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MYMIC, LLC

January 2004

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U.S. Army Research Institute
for the Behavioral and Social Sciences

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13. SUPPLEMENTARY NOTES

14. ABSTRACT *(Maximum 200 words)*: This report summarizes a project conducted to develop a methodology to evaluate collective training devices and apply that methodology to the Close Combat Tactical Trainer (CCTT). CCTT is a complex collective training device; there are significant cost and operational management issues in performing a controlled training transfer study or effectiveness evaluation. The study developed a qualitative method for performing qualitative effectiveness assessments and used it to evaluate the effectiveness of CCTT. The methodology was demonstrated to be effective. Based on analysis of feedback and perceptions acquired during data collection visits to units and fixed sites the consensus opinion of users is that CCTT is performing the mission for which it was designed. Users have embraced the technology, are enthusiastic proponents as well as eager users, and have little criticism of the simulator technology, the overall training environment, or site operations. CCTT is a critical capability that provides a step or gate in preparing for major live training events. Users do not rate the importance of training in CCTT as highly as field training. Planning for CCTT exercises and command oversight of those activities varies significantly by unit.

15. SUBJECT TERMS

Training Effectiveness, Qualitative Assessment, CCTT, Close Combat Tactical Trainer, Collective Training Device, User Feedback

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Assessing the Effectiveness of the Close Combat Tactical Trainer

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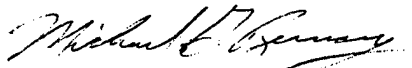
FOREWORD

The Close Combat Tactical Trainer (CCTT) is a virtual training system developed to train the U.S. Army's mechanized units in fire and maneuver. While designed as a company level and below trainer, it can also support battalion training. CCTT was fielded over a period from the mid-1990's to early in this decade. It represents a significant investment by the U.S. Army to provide its mechanized units with a state-of-the-art virtual training system. CCTT has been fielded at five Active Army sites in the Continental United States, three sites in Germany and a site in Korea. In addition, there are mobile CCTT simulators that serve the National Guard regionally. CCTT provides a means to safely and affordably train many of the mission essential tasks of armor and mechanized infantry units.

This project resulted from Project Manager, Combined Arms Tactical Trainer (PM,CATT), at the request of the TRADOC System Manager, Combined Arms Tactical Trainer (TSM, CATT), funding the U.S. Army Research Institute for the Behavioral and Social Sciences to obtain Soldiers' opinions on CCTT's effectiveness. Units have had a free hand in determining how they would use CCTT. There are many options and potential methods for its use. This project utilized interview and survey methods to capture the innovative approaches units are using with CCTT and to determine leaders' opinions about its contribution to their overall training strategy and training effectiveness. Funding limited the data collection to two fixed active Army locations, so the findings are far from definitive. This report is a first step in capturing important lessons learned in the use of CCTT and in beginning to gauge the Army's return on its investment.

The results were briefed to the PM and TSM, CATT, the PM, CCTT and their staffs on 13 May 2003. The briefing took place in Orlando with the TSM, CATT and his staff participating via teleconference from Ft. Leavenworth, Kansas.



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This work could not have been accomplished without funding provided by the Project Manager, Combined Arms Tactical Trainer (PM,CATT), COL Kevin Noonan and the CCTT Program Manager, Mr. John Foster. The U.S. Army Training and Doctrine Command (TRADOC) Systems Manager, CATT (TSM,CATT), COL Mark Vinson and his staff were significant contributors to the effort. LTC Frank Villanueva and Mr. Jeff Franssen assisted ARI and the contractor staff in reviewing survey and interview questions and in particular, they coordinated access to the two research sites by the project team.

ASSESSING THE EFFECTIVENESS OF THE CLOSE COMBAT TACTICAL TRAINER

EXECUTIVE SUMMARY

Research Requirements:

This report summarizes a Research Project conducted for the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) in support of Program Manager Combined Arms Tactical Trainer (CATT). The project was conducted by MYMIC LLC under Contract # N61339-02-C-081 with the Naval Air Warfare Center Training Systems Division. The purpose of the project was to develop a methodology to evaluate the user's acceptance and assessment of a collective training device, and then apply that methodology to the Close Combat Tactical Trainer (CCTT). The methodology is based on commercial practice aimed at determining the value of a service or product to a customer. CCTT is a complex collective training device that is representative of an entire class of training technology based on computer simulation technology. Because of the size of the formations trained in such systems, there would be significant cost and operational management issues in performing a traditional controlled training transfer study or training effectiveness evaluation [1]. The ARI Simulator Systems Research Unit, in support of PM CATT wanted to explore methods for performing qualitative effectiveness assessments that could be applied to collective training devices in general and use it to evaluate the effectiveness of CCTT at two Army installations hosting CCTT fixed sites.

Procedure:

The project's purpose was to develop a methodology and apply it at Ft. Carson, Colorado and Ft. Riley, Kansas. For each installation three close combat battalions were selected by their command to participate in the study. The chain-of-command in each battalion from commander through maneuver platoon sergeant level was queried regarding their experiences using the CCTT training system, their personal assessment of its value, and their recommendations for changes and improvements. Fixed site management was also included in this effort. A total of 116 individuals, as shown in Table 1, were either interviewed or completed a position-specific survey questionnaire.

The survey questionnaires and interview protocols were developed from a set of Issues approved by ARI and TSM, CATT using a decomposition process. For each issue, subissues were developed, then a crosswalk of subissue to position created. The crosswalk helped to determine which subissues could appropriately be addressed by each position in the chain-of-command. Once the crosswalk was completed, one or more questions for subissue were developed and assembled into an interview protocol or questionnaire specific to the position held by the subject. Subjects included Company Commanders, Platoon Leaders and Platoon Sergeants who were surveyed at the CCTT site or in their units. Battalion Command Groups and S3's were personally interviewed at their unit by at least two members of the study team. The study team was comprised of retired field grade combat arms officers who had previous knowledge of and experience with the CCTT program and system.

Responses were entered into a Microsoft Access database that was used for an analysis to determine consensus responses for each question, then a finding for each subissue, and issue by position. A final analysis step examined the findings for all positions to determine an overall issue finding. This report also includes perceptions, feedback and suggestions offered by study participants. We distinguish, in the report, user feedback from observations made by the study team members.

Position	Interviews	Surveys
Site Manager	2	
Site TOR	2	
Battalion Commander	5	
Battalion S3	6	
Battalion XO	5	
Battalion CSM	6	
Company Commander		15
Platoon Leader		41
Platoon Sergeants		34
Total	**26**	**90**

Table 1. Subjects Interviewed

Findings:

The general consensus is that CCTT is performing the mission for which it was designed. This follows from the study team's analysis of feedback and perceptions acquired during data collection visits to units and fixed sites during which they observed CCTT training exercises. Users have embraced the technology, are generally enthusiastic proponents as well as eager users, and have little criticism of the CCTT simulator technology, the overall training environment, or site operations. Units manage CCTT as a critical training capability that they view as an essential step or gate in preparation for major live training events. Users do not rate the importance of training in CCTT as highly as field training and are not willing to trade off any resources that support live training for access to CCTT. There is not specific command guidance requiring CCTT usage at any level, but users have self-imposed requirements for using the system to maintain Mission Essential Task List (METL) proficiency and prepare for any evaluated or critical collective training event, such as an Army Training and Evaluation Plan (ARTEP) or National Training Center (NTC) rotation. Planning for CCTT exercises and command oversight of those activities varies in its rigor significantly by unit. There is little interaction or monitoring of actual training exercises above Battalion level. The canonical practice found by the study team is that CCTT training is scheduled, planned, and supervised by company grade officers. At the installations visited, CCTT is used predominantly to support company and below training; it is managed as a company-level resource to train platoons and the company team. In addition to company and below collective training on Tactics, Techniques and Procedures (TTPs) and missions, the study team observed significant use of the simulator to train gunnery skills. Users and sites are developing innovative usages for CCTT described in more detail in the report.

Utilization of Findings:

The methodology for developing survey and interview instruments, their use in collecting input, and the analysis of that input to determine the value of a collective training device were effectively demonstrated during this research. This methodology has general application to collective training technology and systems and could be further generalized and refined as a standard approach.

CONTENTS

ASSESSING THE EFFECTIVENESS OF THE CLOSE COMBAT TACTICAL TRAINER

Background

Historical.

The Close Combat Tactical Trainer (CCTT) is the first full scale development of a networked simulation system designed to support team and collective training. Its precursor, Simulation Network (SIMNET), was developed by DARPA in the early 1990's (Alluisi, 1991, Burnside, 1991) as a demonstration of the feasibility of networking simulators and of the potential to provide effective virtual field training using a network of simulators. The CCTT program applied the technology developed and lessons-learned from SIMNET to design, develop and field a system for the U.S. Army beginning to train armored and mechanized infantry combined arms teams in an immersive virtual world as part of a total unit training approach. Other Battlefield Operating Systems do participate in the training in order to portray a more realistic battlefield and derive some training benefit from use of this system as well.

During the development of CCTT (Mastaglio 1994) a concerted effort was made to develop a training-effective system. These efforts involved applying user-centered design principles (Mastaglio & Williamson, 1995), integrating users into a concurrent development environment (Mastaglio & Thomson, 1993), conducting scheduled formal evaluations of the development effort via periodic user exercises (Goodwin & Mastaglio, 1994), and exploring how to best use the capability CCTT would offer (Goldberg et al, 1994).

From 1998 though 2002 CCTT was fielded at multiple installations throughout the Continental United States (CONUS) and to overseas locations for use by deployed U.S. Army units. It is, therefore, appropriate to assess the effectiveness of those facilities in order to determine the value added by the system to unit training plans and its impact on their combat capabilities.

This research project designed a training effectiveness assessment of CCTT to gauge its value and evaluate, at least subjectively, the efforts made during development to ensure it would meet user needs. However, it is the opinion of the authors that a comprehensive assessment is probably neither feasible nor would its true cost be justifiable.

Theoretical.

A complete training effectiveness analysis of any system requires controlled-use scenarios, access to and control of subject units throughout their training life cycle, significant data collection, and analysis (Boldivici et. al., 2002). Some would argue that it must include a comparison to alternative training methods (e.g., a baseline training approach such as a field training exercise) to truly assess whether the system is worth the invested development funds and commitment of a unit's available time. Such an effort would be cost prohibitive and time consuming.

MIL-PRF-29612B (Department of Defense, 2001) contains limited guidance for assessing training products effectiveness relative to their ability to affect battlefield performance. Its purpose is to establish a contractual baseline for instructional material, primarily courses and overall training programs. This standard specifies how to evaluate them for either traceability to articulated design requirements or the military mission they are intended to support, known as Type A evaluations. Or, a Type B evaluation that focuses on life cycle maintenance costs. The methodology required for a collective training device to assess its effectiveness is in the Type A assessment category but that requires user feedback; mere traceability of technical capabilities will not provide insight into the value provided by the simulation to using units in terms of their combat capabilities. This requires a qualitative assessment that captures user level satisfaction and use of the device within an overall unit training strategy.

The significant issues for CCTT are what value its users perceive they achieve, are they satisfied with the technology and implementation approach, and do they use it to their advantage to improve unit performance, hence combat readiness. This type of assessment can be more properly termed a training utilization assessment. In an empirical sense, a system cannot be training effective unless it is used properly; training utilization is a necessary condition for training effectiveness. Therefore, studying the training utility of CCTT provides the first step in a potentially longer term and more comprehensive effort to evaluate training effectiveness. This effort also provides valuable insight, from a customer perspective, into the technology and the context in which it is used today. The results will also help the U.S. Army determine where technology enhancements warrant Preplanned Product Improvements (P^3I) and how to improve training strategies or site operational policies.

Assessing training effectiveness of computer-based simulations designed to support collective training has long been a challenging issue for training developers and researchers. Cost savings are often cited as valid proof that the use of wargames or constructive simulations to support collective training are a wise investment of government resources. It is appropriate to now determine the value that units who train with CCTT have realized from the Army's investment. The objective of this project is to assess training utilization in terms of the following:

- Is the device being used as it was designed?
- Do its users perceive the device as having value to them?
- Are the results of training events in the device integrated with and used to plan for other training events?

This project developed and implemented a methodology to provide this insight for CCTT. The methodology has potential value as an approach to assessing a broad range of collective training simulation systems.

Programmatic.

The military's previous interest in and efforts to assess the effectiveness of their training systems have focused on the actual technology and its effectiveness. This is still a valid perspective, however we would like to suggest that effective use of CCTT, as a system, is a customer relationship management (CRM) challenge (Hurwitz Group, 2002). CRM, as the term is used in industry, focuses on meeting the needs of a particular customer or class of customers. Effective training utilization is in reality a CRM challenge for the Army's Training and Doctrine Command (TRADOC). Regardless of the quality of the technology or investment of development funds, the system will only be of value to its ultimate customer, units in the field, if they are able and motivated to use it effectively. A training utilization research effort to base point the current situation is a first step in determining current device usage and customer satisfaction on a pathway to determining the effectiveness of a training device.

This evaluation should provide valuable insight for the U.S. Army about how well CCTT has been assimilated into U.S. Army unit training programs at selected units that are representative of the entire user community and the value its users perceive that it provides to them. This report is based upon information resulting from a data collection and assessment methodology that has demonstrated its value and is reusable in any future efforts to expand the evaluation. The methodology assessed utilization of the CCTT facilities and the perceptions of its value within a sample population of users. Both the methodology and data collected provide precursors to either a more comprehensive evaluation of the effectiveness of training at CCTT fixed sites or more intensive future assessments of the technology or both. We visited two CCTT fixed sites to conduct interviews of selected combat arms units that use those sites, and reviewed data already collected by the U.S. Army. We evaluated site procedures and policies to accumulate data for analysis and the final report.

This effort concentrated on the use and perceived value of CCTT at the Battalion and Company levels with input from Platoon Sergeant up the chain-of-command through Battalion Commander. To focus the effort, the following issues were developed and approved by ARI and TSM-CATT to guide the effort.

1. Are CCTT fixed site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?
4. Do junior officers and non commissioned officers consider CCTT a valuable resource, and how do they manage their training time to use it effectively?
5. Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?

These six issues were decomposed into 32 subissues. An additional four issues were identified during initial site visits that, while not directly related to the six major issues, could provide valuable feedback to the study sponsors. These were also investigated. Subissues were used to generate the questions that were then presented to the unit personnel using surveys and interviews. Appendix A contains a crosswalk of issues to subissues. A detailed description of the methodology followed is contained in the next section of this report.

Methodology

The approach to assessing training utility of CCTT utilized existing data already being collected to help design questionnaire and survey protocols. These were used to survey users and interview the primary CCTT user community, as well as contractor support organizations, respectively. This community included: Platoon leadership, Company commanders (Co Cdr) and Battalion commanders (Bn Cdr), Battalion Command Sergeants Major (Bn CSM), Executive Officers (XO) and S3's. A data collection effort at two fixed sites located within CONUS was selected as the most effective method for obtaining a representative user sample population. An assessment of that collected data resulted in findings that should characterize the entire CCTT system of sites and its community of users.

To accomplish the analysis in a reasonable length of time and at reasonable cost, we sampled units located on post at Ft. Riley, KS and Ft. Carson, CO, installations that host fixed site CCTT facilities. ARI and TSM, CATT determined which units were most appropriate in order to obtain feedback that was representative of the entire population of users.

This study was conducted in three phases:

- A preparatory phase involving the writing of a study plan and the identification of available data, the development of the survey instruments and the coordination with the study sites and units.
- A data collection phase during which the team visited Ft. Riley and Ft. Carson to assess the operational practices at fixed site facilities and collect survey data from three heavy battalions at each post.
- A data analysis phase that compiled and studied the data collected in phase 2 to generate appropriate findings, observations and recommendations.

Preparatory Phase.

a. A formal research plan was developed and delivered to the government for review and approval.

b. Survey and interview forms were developed as data collection tools. Survey questionnaires were designed so that they could be completed at the conclusion of a CCTT training event at the fixed site or returned later to the team. Interview protocols

were designed to be used in sessions with individual officers and Command Sergeants Major.

c. An Access Database was developed for use as a repository for the results of all interviews and surveys. This database is available to the government for use in future studies or analyses.

d. Schedules for team visits were finalized during this phase, based upon input from TSM office.

Data Collection Phase.

a. During the initial visit to each site, the team reviewed operating procedures and calendars and interviewed the facility management team. During this trip we also conducted an in-briefing and coordination meeting with the operations sections (S3 Shop) of the combat arms battalions which were to be surveyed. A follow-up visit to each site was scheduled to conduct unit interviews. Dates for survey questionnaires to be administered to each company were coordinated at this time.

b. During the follow-up visits the team interviewed CCTT fixed site management teams, Commanders, S3's, Executive Officers, and Command Sergeants Major in the selected Battalions. Company commanders, Platoon Leaders (PL) and Platoon Sergeants (PSG) in these same battalions completed surveys on the date coordinated with the unit S3.

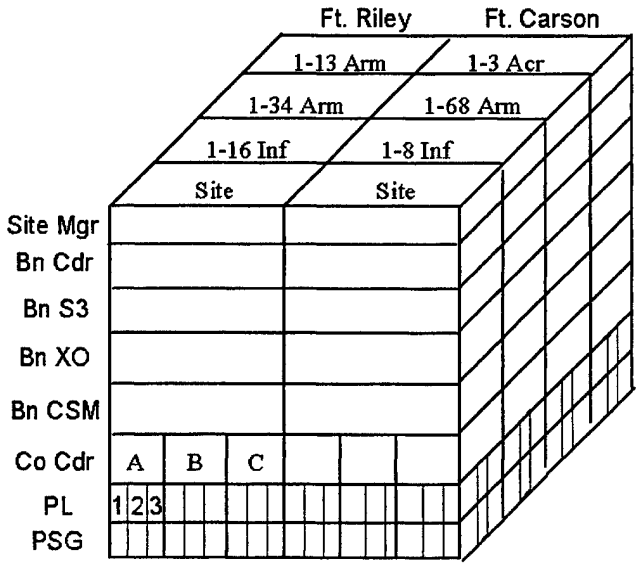

Figure 1. Data space.

c. The answers resulting from the interviews and surveys were input into an MS Access Database. Respondents were broken down by position, with each position occupying a separate table in the database. Rows in each table represent an individual's answers to questions, while columns represent a specific question posed to all respondents assigned to that position. Figure 1 represents the data space.

Data Analysis Phase

a. The project team developed and used a multi-pass analysis effort to study the responses as seen in Figure 2. In the first pass, the data was analyzed to determine, from the set of responses, a consensus answer, if possible, for each question for every position. These responses were then used to determine a finding for each subissue by position.

b. Subissue findings were in turn used to determine a finding for each issue by position.

c. A final pass examined the collective responses by issue and by position to determine the overall findings reported in Section IV.

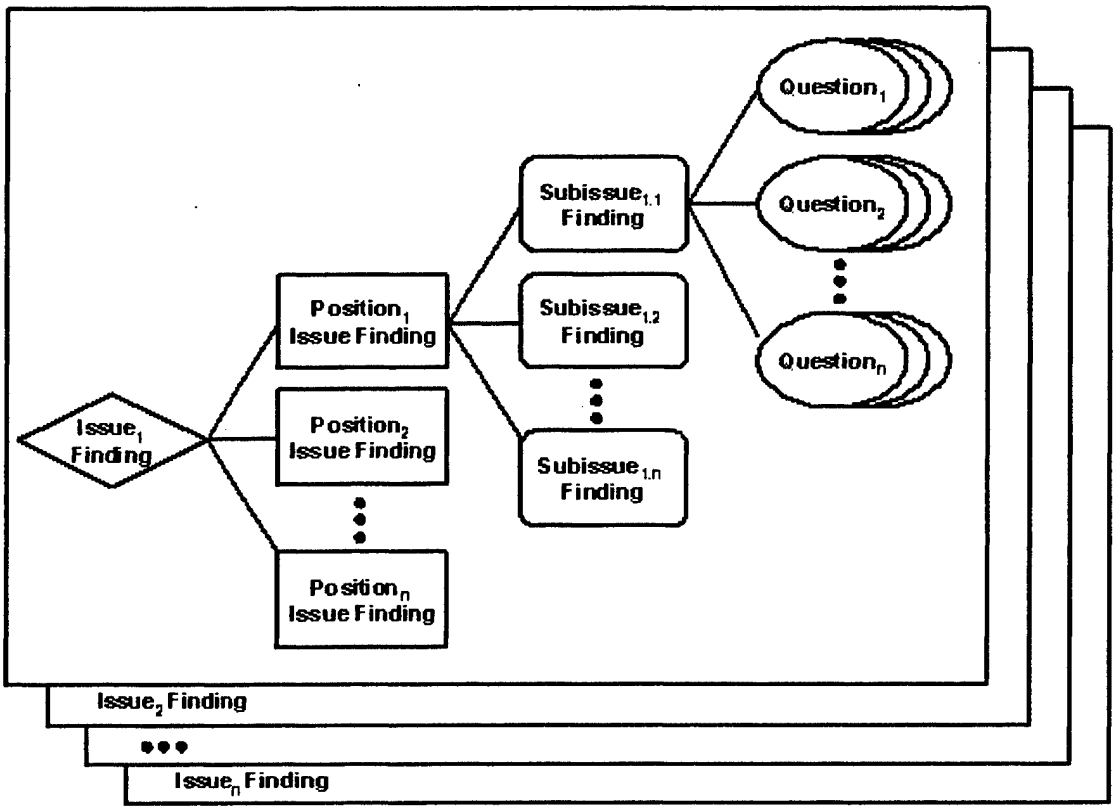

Figure 2. Multi-pass analysis.

Findings & Discussion

This section of the report provides the overall findings by major research issue. As described above and shown graphically in Figure 2, the study determined findings for each subissue and associated key questions for Issues 1 through 6. Answers to each question by the subjects and a consensus answer as determined by the analysts are contained in an MS Access Database delivered as part of this report. The analysis team determined a finding for each Issue for each of the three surveys and five interview respondent groups or duty positions, e.g., Battalion Commander or Platoon Leader. To determine an overall finding for each issue, the seven Issue-level findings (one for each military unit duty position) were analyzed to determine an overall finding as shown below. Appendix A shows, in spreadsheet format with a table for each duty position, the decomposition of issues down to questions asked and the analysis results (consensus question answers, sub issue findings and issue findings by position).

In this section each issue and its overall related finding is shown followed by a table for each subissue showing the analysts finding for that subissue by duty position; note that not all subissues are relevant to each duty position, therefore the table for a particular subissue only shows the relevant duty positions. Subordinate to each subissue we discuss compiled responses to key questions across all positions showing statistical data, as appropriate, to back up the subissue and issue findings. This detailed information on key questions is indented and blocked. At the end of each *issue* section is a discussion of the overall issue finding for those who may not want to read all the subissue and key question detailed information. It is worth repeating here that these findings are based on a sample with data collected at two installations hosting CCTT fixed sites from a total of 6 Battalion-sized units.

ISSUE 1

ISSUE: Are CCTT fixed site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?

FINDING: CCTT sites are being operated in accordance with established policies, and users find them conducive to achieving effective training.

SUBISSUE 1.1: Are written procedures available?

Position	SubIssue Finding
Site Management	Yes, written procedures are available.

In response to a question regarding the availability of published SOPS for the CCTT fixed sites, all four site management personnel (Contractor Logistics Support (CLS) site manager and TOR) stated they were available and were able to readily produce them.

SUBISSUE 1.2: Are sites following prescribed procedures?

Position	Subissue Finding
Site Mgt	Yes, but site staff interaction is critical.

All site management personnel interviewed (4) responded that both the site and local units follow published PM-CCTT and site policies and procedures; two of them indicated that it was often necessary to assist small unit commanders one-on-one do this.

SUBISSUE 1.3: Is a Training Support package (TSP) available to assist units integrate CCTT into training strategy and plans?

Position	Subissue Finding
Site Mgt	General practice has evolved such that face-to-face interaction is the predominant method to help units prepare.
BnCdr	Battalion Commanders find the sites very helpful, from creating scenarios from scratch to adapting existing ones.
BnS3	Battalion S3s relate that Training Support Packages are available and help crews to use simulators, implement planning processes, and prepare scenarios.
CoCdr	Commanders aware of the TSPs use them and find them helpful. However, less than half of them are aware, so dissemination of this information (that TSPs exist) is a problem.
PL	While a training support package is available, most PLs are either not aware of them or don't have the time available to use them.

When asked about the availability of Training Support Packages (TSP) 35% of company grade officers serving as Company Commanders and Platoon Leaders were aware that they were available; during interviews 4 of 15 senior leaders (Bn Cdr, XO, S3 and CSM) identified TSPs as part of the assistance their units receive from the CCTT. On a 5-point scale, with 5 being highest[1], Company Officers who actually use TSPs gave them an average score of 4.17.

SUBISSUE 1.4: Is site utilization data available?

Position	Subissue Finding
Site Mgt	Yes, site utilization data is provided to the PM.

All four site management personnel interviewed indicated that site utilization is tracked and were able to show the reports used to do this.

SUBISSUE 1.5: Do prescribed procedures facilitate CCTT usage?

Position	Subissue Finding
Site Mgt	The jury is split 50-50 on this one.
BnCdr	Prescribed procedures facilitate CCTT usage.
BnS3	Battalion S3s find that prescribed procedures are very helpful in facilitating CCTT usage.

[1] Note: This five-point scale applies to all discussions of ratings in this section.

BnXO	Site procedures facilitate CCTT use.
BnCSM	CSMs feel that prescribed procedures facilitate CCTT usage.
CoCdr	Yes. Commanders get the bulk of their knowledge directly from the site staff.
PL	Yes, prescribed procedures for using CCTT do facilitate usage.
PSG	Established procedures for using CCTT site facilitate its use.

All senior leaders with one exception (22 interviewed) stated that local procedures they must follow to use CCTT effectively support their training. Company leaders (Commanders, Platoon Leaders and Platoon Sergeants) rated the support these procedures provide to them for using CCTT at an average score of 3.82. Company Commanders rated their own familiarity with site procedures as 3.94. Sixty-nine percent of Platoon Leadership (Platoon Leaders and Platoon Sergeants) indicated they were familiar with local CCTT Standing Operating Procedures (SOPs). Interestingly, all 23 of those who stated they were unfamiliar with procedures were platoon leaders; many of these were newly commissioned and had arrived recently for their first duty assignment in a combat unit.

DISCUSSION: Almost without exception all members of the chain-of-command found that procedures for using CCTT facilities were conducive to effective and efficient training. There were a few individuals who had one or two negative comments about a site policy (e.g., Soldiers had to change into their running shoes when they entered one of the fixed sites rather than train in their combat boots in order to keep the facility clean). However, policies specified by the PM-CCTT and those locally established policies do not preclude units from doing the training they wanted. In fact, these SOPs appear to be well thought out and appropriate for meeting user needs. Worthy of note is feedback at one installation from a number of company level leaders that suggested the site be available for longer hours on a daily and weekly basis. This condition was not mentioned by subjects we surveyed at the other installation. PM-CCTT should consider conducting a review of operating policies in terms of available hours units actually have access to fixed site facilities at all such sites and compare them for consistency and compliance with established CLS contractual direction.

We found that use and perceived quality of TSP available at the sites varied considerably by units. Some units used these to help plan and execute training while others either were not aware of their existence or did not think they were adequate to meet their needs and consequently created their own exercises. The units, which were more positive about the value of TSPs, were located at an installation where the site staff was particularly proactive in working with units to help them plan and prepare for CCTT exercises.

ISSUE 2

ISSUE: Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?

FINDING: Users assess CCTT as having a direct positive impact on their combat readiness. Units consistently include CCTT training in their preparation for live training

events and believe its use directly improves METL performance levels. Opinions vary by unit and grade as to whether key staff and chain-of-command oversight of the preparation for and execution of CCTT training exercises is sufficient.

SUBISSUE 2.1: Do units integrate CCTT into their overall strategy or use it as a "filler" activity?

Position	SubIssue Finding
Site Mgt	Unit use varies depending on leadership. CCTT events get cancelled due to other priorities.
BnCdr	Battalions use CCTT primarily during green training cycle, but some in amber and red cycles. However, they do not require a specific level of use.
BnS3	Battalions use CCTT mostly during green training cycle, but some in amber cycles. However, they do not require a specific level of use.
BnXO	Units integrate CCTT usage into their training plans but there are no prescribed usage levels
BnCSM	Yes, while there is no requirement on use, units integrate CCTT as much as possible into their training strategy.
CoCdr	CCTT is used as an augmentation to training, but not as an integral part as more traditional training venues are.
PL	Units use CCTT as an additional training resource if time is available.
PSG	CCTT is used most often as an activity to fill out training schedules and not as integral part of training strategy.

Senior leaders indicated they mostly use CCTT during the green training cycle (15:22), but most gave multiple answers with 10 indicating usage during amber, and 3 during all cycles – *green* (unit is focused on training for combat missions), *amber* (unit has non training support commitments, such as installation security guard, but is able to conduct some training) and *red* (unit personnel are fully committed to support activities and generally not available for mission training). Fourteen percent of company leadership (90 subjects) responded that CCTT is an integral part of the overall training strategy, 67% said they use it when training schedule time is available, and 33% stated both. Eighty-two percent (19) of senior leaders indicate that there is no prescriptive CCTT usage requirement by Major Commands, one responded yes, 4 cited event driven requirements (e.g., upcoming NTC rotation) and 3 qualified their answer by saying that written or verbal higher command guidance encouraged use.

SUBISSUE 2.2: Is CCTT considered a key event in preparing for NTC rotation or ARTEP?

Position	SubIssue Finding
BnCdr	Battalion Commanders consider CCTT training as a key event in planning for NTC rotation or ARTEPs.
BnS3	Battalion S3s consider CCTT as a key event in preparing for NTC rotations or ARTEPS.
BnXO	CCTT is a critical step in train up for live exercises or evaluations

BnCSM	Yes, CCTT is considered a key event in preparing for upcoming training.
CoCdr	Yes, CCTT is used as a pre field training tool for gunnery, NTC, and ARTEP.
PL	Yes, CCTT is considered a key event in preparing for NTC rotation or ARTEP.
PSG	Most units include CCTT as part of their training for major live field training including NTC

Seventy-five percent (18) of unit leaders (BnCdr, XO, S3, CSM, CoCdr, PL, and PSG) responded that CCTT was used as a critical preparatory event for live training events. Any negative responses came from company leadership. All senior leaders (22) responded that CCTT availability enhanced their ability to prepare for major live training events.

SUBISSUE 2.3: Do Commanders monitor usage of CCTT?

Position	SubIssue Finding
BnCdr	Most Battalion Commanders monitor CCTT training personally of through their S3s and S2s. A significant portion of battalions do not require the companies to report on CCTT use.
BnS3	Battalion S3s monitor usage of CCTT through personal visits and S3 staff visits
BnXO	CCTT usage is not a critical event monitored by Cdrs; other Bn Staff members check on training though.
BnCSM	Yes, commanders monitor CCTT exercises.

When asked about unit monitoring of CCTT use by their subordinate companies/troops, 69% of field grade officers (BnCdr, XO, and S3) stated that their units do not require companies to report on usage. One unit stated that this was not necessary because they control and manage all usage and therefore know this information, four responded positively. When senior leaders (22) were asked who monitored scheduled company-level CCTT exercises, two stated no one, while the other 20 had varying answers ranging from the Battalion Commander to Master Gunner.

SUBISSUE 2.4: Do Commanders and Staff visit CCTT training events?

Position	SubIssue Finding
Site Mgt	Yes, but the frequency drops off with seniority.
BnCdr	Battalion Commanders and their staffs routinely visit CCTT training events.
BnS3	Battalion Commander and his staff visit CCTT training events although the frequency varies significantly among units.
BnXO	XO's have visited site, but generally are not involved in exercise or oversight of those exercises
BnCSM	Yes, commanders and staff regularly visit CCTT training events.
CoCdr	At the Bn level, visits by the commander are rare as the S3 is the primary Bn level staff member involved and active. Co Cdrs tend to visit more often. XOs and 1SGs tend to not be involved in the CCTT training.
PL	Bn Cdrs and their staff sometimes visit CCTT training, while Co Cdrs do this regularly.
PSG	Bn leadership and staff participate in or monitor CCTT training

events at company and platoon level less than half of the time. Oversight of platoon training by Co leadership is higher but does not appear to approach a level where they monitor and support these events on a regular basis.

All but one (of 22) senior leaders had visited the CCTT site. Responses on frequency of visit to unit training self-reported by senior leaders varied with the most frequent answer (5 responses) being every time and next most frequent (4 responses) was quarterly. Eighty-five company grade officers were asked how often their Battalion Commander visits platoon and company CCTT exercises using a three-point scale (1=never, 2=sometimes, 3=always); their responses averaged 2.1.

This same group of subjects gave the same (2.1) average score for visits by Battalion Staff. Interesting to note is that 25 subjects responded "1" (never). When the entire company leadership (CDR, PL and PSG) was asked who from Battalion Staff and higher visited training (90 subjects), 45 responded S3 or S3 section personnel, 13 stated no one.

SUBISSUE 2.5: Does CCTT training positively transfer to ability to perform to Mission Essential Task List (METL) standards?

Position	SubIssue Finding
BnCdr	Battalion Commanders believe that CCTT training increases METL proficiency in their units.
BnS3	Battalion S3s believe that CCTT increases METL proficiency in their units.
BnXO	CCTT Training positively transfers to improved METL performance.
BnCSM	Yes, CCTT training positively transfers to ability to perform METL standards.

Nineteen out of 22 senior leaders believe CCTT increases METL Proficiency, 2 believe it can only sustain proficiency; one stated that this requires "muddy boots".

SUBISSUE 2.6: Would commanders use CCTT to prepare for or rehearse a specific combat mission?

Position	SubIssue Finding
BnCdr	Depending on terrain databases (TDBs) and availability of actual equipment, Bn Cdrs would use CCTT to prepare for or rehearse a specific mission.
BnS3	Battalion S3s would use CCTT to prepare for or rehearse a specific mission if appropriate terrain databases were available.
BnXO	CCTT would be used to prepare for specific combat missions and that rehearsals done if TDBs were available for the operational area
BnCSM	Yes, commanders use CCTT to prepare or rehearse for specific combat missions.
CoCdr	Yes, CCTT is used to prepare for specific missions like NTC and Table XII.

Given sufficient time all senior leaders would use CCTT to prepare for an anticipated combat mission.

SUBISSUE 2.7: Does CCTT usage have any negative impact on unit readiness?

Position	SubIssue Finding
BnCdr	Battalion Commanders believe that CCTT use has no negative impact on unit readiness; however, units should be aware of artificial control with CCTT not feasible in the field.
BnS3	Battalion S3s find that CCTT use has no negative impact on unit readiness.
BnXO	Negative impacts from CCTT are primarily due to technology limits, not simulator design
BnCSM	No, CCTT usage does not have any negative impact on unit readiness.
CoCdr	No. No instances of negative training noticed by the chain of command.

Fourteen of the 22 senior leaders said CCTT did not cause negative training. Others cited varying examples of potential negative training ranging from communications to wear and tear on CVC helmets while 12 of 15 Company Commanders responded that there was not any negative training impact from using CCTT.

DISCUSSION: CCTT was described by several leaders as a "training enhancer"; we thought that this characterization was a good summary for this issue. CCTT is undoubtedly the training environment of choice when preparing for major field training events and live fire ranges. Although none of the respondents would trade-off CCTT time for live training opportunities, it is by far the first choice in getting ready to go to external evaluations and NTC rotations. Almost all respondents, especially those who had been in their position for six months or more, consider the use of CCTT critical in preparing for combat and NTC.

There was one major exception, in an armored unit still equipped with M1A1 tanks that is stationed at an installation with a CTT Facility equipped with M1A2 simulators. Although there are apparently modification kits that can be used to make the M1A2 simulators operate more like an M1A1, the site coordination required to have them adapted, and the fidelity of the modified simulator apparently is enough of a detractor that the M1A1 equipped unit made very little use of the site. PM-CCTT should assess the situation in a cooperative fashion with any installations where this situation exists to determine if there is a systemic problem or this unit was just an exception.

An interesting finding regarding questions used to assess this issue is that METL are regularly used in most units to guide their training per Army training doctrine, and users believe that they have a good understanding of which tasks are trainable to standard in CCTT and which are not. They use METL as a basis for forecasting and planning CCTT training and, particularly at the higher ranks, express confidence that it will train to METL standards.

Units generally schedule and use CCTT most often during amber and then green training cycles. Although they would use it during red cycles as a way to maintain METL proficiency, respondents commented that they seldom have sufficient unit personnel available during red cycle to make it worth scheduling and planning a CCTT training event.

Site managers commented that from their perspective there is not a consistent strategy for using CCTT between units. Furthermore, members of the chain of command above the training unit do not participate or observe training as much as they should. Platoon Sergeants agreed with this latter point; they believe training should be monitored more rigorously by leaders above the company level. This former point is worthy of further study.

The study queried all senior officers and CSMs regarding published guidance on CCTT usage. There does not appear to be any published training policy on when or how to use CCTT either on a calendar basis (e.g., a required number of days of usage at Platoon, Company or Battalion level per quarter) or as a gate leading up to a more rigorous or costly training event at the Division, Corps or Army level. One brigade level commander in his Commander's Training Guidance encouraged CCTT usage, and at one installation it was widely acknowledged that a verbal policy was issued at the 07 level requiring CCTT usage before expending live ammunition or using fuel for field training.

ISSUE 3

ISSUE: How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?

FINDING: CCTT is being integrated into unit training strategies and plans as a key event, but is not given the same emphasis or as closely managed as field training. CCTT exercises are scheduled and planned well in advance. Either (both in some cases) unit METL requirements or events they will encounter during upcoming live training are the basis for selecting scenarios and exercise objectives. CCTT is used more in preparation for future events (field exercise and combat operations) than as a context for remediation of deficiencies identified during live or other training.

SUBISSUE 3.1: When in the planning cycle is CCTT training scheduled?

Position	SubIssue Finding
BnCdr	Battalion Commanders schedule CCTT training quarterly.
BnS3	Battalions plan the use of CCTT quarterly.
BnXO	CCTT training is scheduled 2-3 months in advance
BnCSM	CCTT training is scheduled in the planning cycle between 1.5 to 3 months out.

Twelve of 22 Senior leaders stated CCTT training events are programmed quarterly, others stated anywhere from 6-9 weeks ahead of time and one claimed this scheduling was done a year out.

SUBISSUE 3.2: When in the training development cycle is a CCTT training event planned?

Position	SubIssue Finding
Site Mgt	About one month out with planning done in one-on-one meetings.
BnCdr	Specific CCTT training events are planned 6-8 weeks out and scenarios are developed two weeks out.
BnS3	Battalions plan CCTT training events 4-8 weeks out.
BnXO	CCTT training events are planned about one month prior.
BnCSM	CCTT training events are planned from 2-8 weeks out in the training development cycle.
CoCdr	CCTT training is planned in the quarter in which it will be used.
PL	A CCTT training event is planned 4 weeks prior to use.
PSG	CCTT training events are planned a month or more in advance, although in some cases it is put off until the last minute.

All 116 subjects were asked when CCTT exercises were actually planned. The most common response was that detailed planning for a CCTT training event (i.e., exercise and scenario details) begins 30 days ahead of the scheduled training or sooner. Many respondents answered in terms of specific events (e.g., training meeting, prior to gunnery range) and only seven responding that it is planned at the last minute – a week or less before the training event takes place. Twenty-four of 90 company and below leaders did not answer this question.

SUBISSUE 3.3: Is CCTT identified as a specific resource to address training deficiencies?

Position	SubIssue Finding
BnCdr	Battalion Commanders identify CCTT as a specific resource to address training and METL deficiencies.
BnS3	Battalion S3s identify CCTT as a specific resource to help address training or METL deficiencies. However, CCTT cannot be used to train tasks to standard and must be used with field training.
BnXO	CCTT is managed as a critical resource to address unit training deficiencies.
BnCSM	Yes, CCTT is identified as a specific resource to address training deficiencies.

Seventy-eight percent of senior leaders (17 of 22) believe CCTT can address specific training or METL deficiencies; some of them qualified their answer (e.g., C2 tasks, plat level, to "p" level only, etc). Sixty-four percent of them believe CCTT can train unit tasks to standard; others are unsure or believe that live training is necessary to achieve this goal.

SUBISSUE 3.4: Do units (at any level) prescribe a minimum amount of CCTT usage?

Position	SubIssue Finding
BnCdr	Battalion Commanders do not place a quota on CCTT usage within their units.
BnS3	Battalions do not set CCTT training quotas.
BnXO	There are no prescribed requirements for usage of CCTT
BnCSM	No, units do not prescribe a minimum amount of CCTT usage.

CoCdr	No minimums are set at any level.

Only 2 interviewees out of 37 stated that there was a quota established by the battalion on the amount of company CCTT use; one said it was once quarterly, the other tied it to preparation for gunnery.

SUBISSUE 3.5: Do units plan CCTT training based upon METL, specific tactical scenarios, operations plans, and/or upcoming field exercises?

Position	SubIssue Finding
BnCdr	Battalions plan CCTT training based upon METL, training deficiencies, specific tactical scenarios, operations plans, and upcoming field exercises.
BnS3	Battalions plan CCTT training based on METL deficiencies.
BnXO	METL is used as basis for planning CCTT Training Exercises
BnCSM	Units plan CCTT training based upon METL and identified training deficiencies.

Fourteen of 22 senior leaders stated METL is the starting point for planning a CCTT exercise, 3 stated that planning the specific exercise was based on a requirement for upcoming live training exercises, 1 said that an Operations Plan (OPLAN) was the starting point and 4 cited multiple answers.

SUBISSUE 3.6: Are plans for CCTT training exercises reviewed by the chain-of-command?

Position	Sub Issue Finding
BnCdr	Company and platoon CCTT training plans are reviewed by Battalion Commanders and their S3s.
BnS3	There is no consensus on battalions reviewing CCTT training plans for companies and platoons. Some units do not review plans, while others are reviewed by the Battalion Commander and/or S3 staff.
BnXO	Some units review plans for CCTT training closely while others do not review them at all
BnCSM	Plans for CCTT training exercises are reviewed at the battalion level, mostly by the BnCdr and S3.
CoCdr	Most of the exercise reviews occur at the company level. Battalion review is limited.

Eighty-two percent of senior leaders (18:22) claimed that the Battalion Commander or S3 reviews CCTT exercise plans, 3 state no one, and 1 said the Battalion Master Gunner. However, 46% (6 of the 13) Company Commanders that responded said their Battalion Headquarters never reviews their plans, another 43% said they sometimes do, and only 1 said always.

72% of these same company commanders (14 responding to this question) stated that they always reviewed Platoon CCTT Training plans; 2 said sometimes and 2 responded never.

SUBISSUE 3.7: Is CCTT considered a key training resource similar to ranges, ammunitions, OPTEMPO?

Position	Subissue Finding
BnCdr	Battalion Commanders consider CCTT as a critical training resource. However, it is not quite as important as field training.
BnS3	Battalion S3s consider CCTT a key training resource, but secondary to ranges, ammunition, and OPTEMPO.
BnXO	CCTT is not as critical a resource to units as live training facilities and resources
BnCSM	Yes, CCTT is considered a key training resource.

68% (15 of 22) senior leaders believe CCTT is a critical training resource for their unit with 2 of these stating that it was not as critical as field training; 1 said it was "nice to have", 2 stated it is not critical but important, and 4 felt it was "not critical" at all.

DISCUSSION: There is a wide range of approaches and extent to which CCTT is integrated in units training plans and strategies. This variability is somewhat a function of the length of the time the installation on which the unit resides has had a CCTT facility and the level of site capabilities vis-à-vis unit equipment. In general, units schedule CCTT usage 60-90 days before the training during quarterly planning. There did not seem to be a limitation on access at the two installations visited, and units did not feel they were in a position to compete for access as frequently happens with ranges and training areas.

Detailed planning of a CCTT training exercise starts about 30 days prior to the event, and scenarios are finalized two weeks before. Almost all training is done in CCTT at company and platoon level. CCTT is both viewed and managed as a Company Commanders training resource. There is little difference in the process for planning a CCTT event between company and platoon level exercises. Company Commanders and Platoon Leaders plan their training with, in some cases, support from their Battalion S3 staff, in others supported directly by site staff or even both. Involvement of the chain-of-command in reviewing training plans for CCTT varies considerably. In some units company grade officers are left to primarily manage on their own, with commanders and their staffs satisfied with review of plans at the training schedule level, while other units require Company Commanders and Platoon Leaders to provide either the Commander or S3 a thorough briefing on their planned training. In one Battalion the CSM worked directly with Platoon Leaders and Sergeants to provide them advice on their planned training. In another the XO (a former S3) reviewed with Company Commanders the scenario and exercise plans. This unit was the exception in terms of command oversight and guidance to company grade officers responsible for planning CCTT training.

Future live training events appear to be a more influential factor in units deciding to use CCTT than identified METL deficiencies or other identified unit performance shortcomings, such as from a previous evaluation or exercise. So while there are no existing "gated training strategies" in published command guidance there appear to be user-imposed gates involving CCTT usage. Close Combat units have embraced CCTT as the training device that they want to use to get ready for live training events and, from our

survey feedback, potential future combat given sufficient lead time. This speaks highly of the capabilities of the system as recognized by users – CCTT provides them the training environment that they are confident will help them do better on those events where they are being evaluated and in actual combat. It would be useful to sample units involved in Operation Iraqi Freedom to determine their usage of CCTT prior to deploying for combat (say in the previous six months) from site records and obtain their assessment of the value it provided in terms of their performance in combat.

ISSUE 4

ISSUE: Do junior officers and non-commissioned officers consider CCTT a valuable resource and how do they manage their training time to use it effectively?

FINDING: Company grade officers and NCOs are the prime users of CCTT, both because that is the way it is generally managed at the Battalion level and because they have easy access to the site for their unit's use. CCTT exercises are primarily planned, conducted, and reviewed at company level. There are units that have active involvement of Battalion staff and leaders, but these are the exception.

SUBISSUE 4.1: Do company commanders plan company level CCTT exercises in addition to scheduled platoon training?

Position	SubIssue Finding
BnCdr	Battalion Commanders relate that Company Commanders plan company level CCTT exercises in addition to scheduled platoon training.
BnS3	Company Commanders plan both company and platoon training.
CoCdr	Most common usage is at the platoon level, but it is used at the company level.
PL	Yes, Co Cdrs plan company level exercises in addition to scheduled platoon training.
PSG	Company level training is conducted using CCTT. Frequency varies considerably by unit with an average of one company exercise every 4 months

All Battalion Commanders and S3's (11 subjects) stated that they use CCTT for both company and platoon training. Twenty-five percent of company leaders surveyed (23 of 90) stated that CCTT is only used for platoon training.

SUBISSUE 4.2: Do Platoon Leaders request or arrange to use CCTT site on their own?

Position	SubIssue Finding
BnCdr	Battalion Commanders relate that platoon leaders request or arrange to use CCTT sites on their own.
BnS3	Platoon Leaders request and arrange to use CCTT sites on their own.
CoCdr	Platoon usage varies greatly, but in general companies and platoons schedule CCTT on their own.
PL	No, the vast majority of PLs do not request or arrange to use the CCTT site on their own.
PSG	Platoon Training in CCTT is generally scheduled by the Company.

All of the 5 Battalion Commanders and 6 S3s interviewed stated that Company Commanders and Platoon Leaders schedule use on their own. Thirty-five of 89 Co leaders (Company Commander through Platoon Sergeant) claim their platoons schedule CCTT use on their own.

SUBISSUE 4.3: Who manages Platoon CCTT exercises? Company exercises?

Position	SubIssue Finding
Site Mgt	Co Cdr involvement is more as an observer, not a participant.
BnCdr	Company Commanders manage platoon CCTT training exercises usually with some form of battalion oversight.
BnS3	There is no set pattern for who manages platoon CCTT training exercises. It varies from "no one" to S3/Master Gunner.
CoCdr	In most units, the S3 and company commander work together in developing CCTT exercises.
PL	Yes, Co Cdrs manage and plan CCTT platoon training exercises.
PSG	Company Commanders plan platoon-level training in CCTT based on METL tasks, identified training deficiencies and upcoming live training events.

Seventy percent of the Battalion Commanders and S3s interviewed responded that no one from Battalion Headquarters oversees platoon CCTT exercises, most responding that Company Commanders did this, others stated CO or S3 shop, some explained that certain staff members (e.g., S2 or Master Gunner) were there to support training. Company leadership (82 responded), when asked who plans company-level training in CCTT, provided a wide distribution of responses with 27 selecting Bn Cdr, 47 the S3, and 31 the CoCdr. Many gave multiple answers.

There was a wide range of answers from company leadership (76 subjects responded) on how units select tasks to be executed during a CCTT exercise with 16 citing METL and 11 stating higher command directions. As to who plans platoon training events, 13 of 15 Company Commander sited the S3, 4 the Battalion Commander, and 2 the Company Commander with some multiple answers. Sixty-seven percent of Company Commanders cited METL as the basis for selecting tasks that their platoons will train for in CCTT.

SUBISSUE 4.4: Do Company Commanders use CCTT to mentor and train their Platoon Leaders?

Position	SubIssue Finding
CoCdr	PLT AARs are usually run by the Co Cdrs. This varies greatly between commands.
PL	Yes, Co Cdrs use CCTT to mentor and train their PLs.
PSG	Company Commanders in about half of the units use CCTT as a context for teaching subordinates TTPs; they participate in training and guide Platoon leaders in developing exercises, but in most cases rely on site staff or leave platoon leaders to learn on their own how to best use the facility

When company leadership (90 subjects) were asked who conducts After Action Review (AAR) of platoon exercises the most common response was the Company Commander (67), the Platoon Leader was the second most common answer (47), and then the S3 (10). Other responses included Platoon Sergeant, Company XO and Battalion Staff. Numerous subjects provided multiple responses.

SUBISSUE 4.5: Do unit leaders believe that there are effects from using CCTT that have a potential negative impact on individual, crew or unit proficiency?

Position	SubIssue Finding
CoCdr	Users view CCTT as a positive impact on proficiency. Some exceptions: land navigation, ground activities, loader tasks.
PL	No, while some PLs stated problems related to the realism of the simulation itself, the vast majority had no answer. Almost all PLs believe that CCTT positively affects individual, crew, and unit proficiency.
PSG	Platoon Sergeants are concerned that CCTT does not replicate the fire control system with the accuracy of a real vehicle. Support for navigation tasks and terrain orientation could be improved. These do not detract significantly from the ability of the simulator to train fire control, movement and coordination within the larger force.

CCTT was cited by company leaders as positively affecting unit proficiency in a wide variety of ways, most commonly cited was crew proficiency (27 respondents) and then platoon proficiency (14). When asked in what areas CCTT had any negative impact on training, 76 company leaders responded, 10 stated that there are none, those citing specific impacts sited the loader tasks set 6 times, communications 5, and gamesmanship 4. Other responses were varied with most citing usage policy (e.g., chain of command support or exercise design) rather than technology or system design limitations.

SUBISSUE 4.6: What use of TTPs are made by unit leaders in planning a CCTT exercise?

Position	SubIssue Finding
BnCdr	Units training in CCTT use TTPs as part of their planning process.
BnS3	Units typically use CCTT site TTPs in planning CCTT exercises.
CoCdr	CCTT exercises are rehearsed in the form of OPORD walkthroughs and map/rock/terrain board drills.
PL	Troop Leading Procedures are followed to prepare for CCTT exercises to include terrain, map recons and review of plans & orders.
PSG	Unit leaders follow similar troop leading procedures as they would for a live exercise or combat prior to beginning CCTT exercise, using terrain boards, overlays and drills to rehearse the planned operation.

Sixty-eight percent of the 90 company leaders surveyed stated that they follow standard troop leading procedures in preparing for CCTT exercise. They cited such practices as rock drills, walkthroughs, and map rehearsals.

DISCUSSION: As stated in the discussion on Issue 5, CCTT at this point in its evolution as a unit training device is a tool for companies and platoons to help them train on METL tasks, most often in preparation for an upcoming live training event. Without exception Company Commanders, Platoon Leaders and Sergeants rate the value of CCTT very high. We found no instances where these leaders felt they were required to conduct this training but would prefer to use the time for other purposes.

CCTT, at the installations visited (Ft. Carson and Ft. Riley), is definitely viewed and managed as a company level resource. Our impression is that there are several reasons for this. The system is easy for units at this level to get access to the sites. Some units schedule usage down to platoon level whenever training schedule changes occur that allow unprogrammed time. There is virtually no direct cost to the unit. Company Commanders do not have to forecast or request any budgeted resources to use the system. Sites can only provide enough tank and Bradley simulators to support up to company team operations. CCTT provides a context for mentoring where the cost of failure or results of mistakes are not career threatening, do not waste resources, and are not professionally embarrassing. Unit leaders have the "freedom to fail" in the virtual environment provided by CCTT and opportunity to learn from those mistakes in a non-threatening context.

ISSUE 5

ISSUE: Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?

FINDING: Close Combat unit leaders believe CCTT directly contributes to unit readiness and potentially reduces resource consumption. However, it is not feasible to develop specific metrics for value or cost effectiveness.

SUBISSUE 5.1: Is there a cost or value metric that could be used to measure CCTT's role in Army readiness (i.e., ammunition saved, OPTEMPO reduced)?

Position	SubIssue Finding
BnCdr	Battalion Commanders cannot quantify the potential contribution of CCTT to their unit's readiness. They do not have the skills at their level to accomplish this.
BnS3	Battalion S3s are not aware of any cost or value metric that could be used to measure CCTT's role in Army Readiness.
BnXO	There is no easy way to measure CCTT's direct contribution to unit readiness.
BnCSM	Yes, a cost or value metric could be used to measure CCTT's role in Army Readiness, but one is not known to them.

Thirty-six percent of senior leaders (8 of 22) think it is possible to quantify CCTT's contribution to unit readiness while 2 had no opinion. However, even for those who thought it possible, most stated it would be difficult.

SUBISSUE 5.2: Are units that use CCTT reducing consumption of any resources?

Position	SubIssue Finding
BnCdr	Battalion Commanders feel that the availability of CCTT allows their units to reduce consumption of other resources.
BnS3	Units using CCTT are able to reduce consumptions of other resources
BnXO	CCTT availability has potential to reduce other resources
BnCSM	Units that use CCTT reduce consumption of mileage and ammunition.

Fifteen of 22 senior leaders believe that CCTT use does reduce consumption of unit resources: specific resources cited varied from fuel to ammunition; 4 specifically cited OPTEMPO miles.

SUBISSUE 5.3: Do unit commanders perceive that using CCTT will allow them to reprogram or save any funds?

Position	SubIssue Finding
BnCdr	Battalion Commanders cannot reprogram or save funds because current management controls mitigate against this.
BnS3	Battalion S3s believe that using CCTT should allow them to save money to use on other units needs, but are not sure how that can be done.
BnXO	Battalions cannot directly benefit (re program) savings from using CCTT
BnCSM	Yes, CSMs perceive that using CCTT will allow them to reprogram or save funds.

Only 6 of 20 senior leaders who responded stated that resource savings achieved by using CCTT would be available to them to meet other unit requirements. The primary reason that savings are not available is because overall budget control is retained above Battalion level.

DISCUSSION: This issue was addressed in the interviews of Battalion leaders and staff (Cdr, XO, CSM and S3). The prevailing, but not universal, opinion was that CCTT has the potential to reduce the consumption of some resources required for live training. However, most field grade officers and CSMs were quick to point out that its best use was when these resources were limited because of other factors (e.g., environmental restrictions, budget reductions, etc.) and CCCT should not be used to reduce any current resource allocations. The intuition of the interviewees was that the contribution to unit readiness achieved by having CCTT available and using it is measurable in terms of some type of cost savings or avoidance. However, no one had a practical solution for exactly how to do this, including several officers who held ORSA specialties but were currently serving in combat leadership positions. The natural resistance of unit leaders to appear to endorse any policy or action that could reduce their budgeted resources when asked to address this issue should not be underestimated. This is a challenging issue still in the realm of ORSA research and may actually be intractable. We recommend that ARI and PEOSTRI consider an effort to interest military academic organizations (e.g., USMA, graduate ORSA students, etc.) in tackling this issue or alternatively query academia and industry for potential approaches through a Broad Area Announcement (BAA) research topic or perhaps both.

ISSUE 6

ISSUE: Are there innovative approaches to using the system appropriate for sharing Army-wide?

FINDING: There are some innovative uses for which anecdotal evidence exist (see Appendix B), however there are neither organized nor informal efforts that provide users the opportunity to share these or even lessons learned and good ideas.

SUBISSUE 6.1: Do sites host user meetings to share training ideas and information about best practices?

Position	SubIssue Finding
Site Mgt	No, sites do not host user meeting to share training ideas.
BnCdr	Battalion Commanders relate that CCTT sites do not host user meetings to share training ideas and information about best practices.
BnS3	The CCTT sites do not host user meetings to share training ideas and information about best practices.
BnXO	Sites do not conduct user-level group meetings to disseminate LL or good ideas.
BnCSM	Sites do not host formal user meetings to share training ideas and information about best practices.
CoCdr	Little apparent effort at site level to encourage dialog amongst users (e.g., exchange good ideas).
PL	No, all PLs said sites do not host user meetings to share training ideas and information about best practices.
PSG	Sites do not host any general meetings of users to disseminate info or best practice. They meet individually to assist each unit.

Eighty-five percent of site management and senior leaders (26) stated there are no processes for disseminating CCTT information beyond one-on-one meetings with site staff. 71% of company leaders (90) responded that the CCTT sites do not have any general methods for disseminating best practices, lessons-learned and similar information to users.

SUBISSUE 6.2: Do units have a staff officer identified at Battalion or Brigade level to oversee CCTT use and assist junior leaders?

Position	SubIssue Finding
Site Mgt	No, formalized interaction is only at the installation level.
BnCdr	Battalion Commanders normally use an assistant S3 or Master Gunner to oversee CCTT use and assist junior leaders. Brigades do not have staff officers who oversee simulation-based training.
BnS3	There is no staff officer at brigade level to oversee CCTT use. At battalion, the Assistant S3 or Master gunner provides oversight and assistant to junior leaders.
BnXO	Battalions staff support CCTT training at S3 Shop level, but no one at Brigade level has this duty
BnCSM	Yes, units use the BnS3 and XO to oversee CCTT use and assist junior leaders.

CoCdr	No regular oversight by either Bn or Bde level staffs occurs. Co Cdr oversight of PLT exercises is the norm.
PL	Assistance with CCTT training for junior leaders vary by unit. Generally Company Cdr and S3 provide mentoring and oversight.
PSG	Battalions and Brigades do not resource or assign an a staff member to oversee CCTT use and assist junior leaders

We asked 35 senior leaders and Company Commanders who oversees company level use of CCTT: 10 responded that S3 or his staff section do this, 7 said no one; also listed were the S2, MG, CO, XO and CSM.

Company leaders (90) were asked in general who assisted them during CCTT training exercises; there were numerous multiple responses, but the following duty positions were cited: Company Commander – 59 times, S3 – 30, PL – 42, Site – 25, Other – 28 (of these 20 were the PSG).

SUBISSUE 6.3: Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?

Position	SubIssue Finding
Site Mgt	None known.
BnCdr	Battalion Commanders are not aware of any informal CCTT user groups that exchange best practice ideas within units or on post.
BnS3	There are no informal (self organized) CCTT user groups that exchange best practice ideas within units or on post.
BnXO	There are no CCTT user groups that share best practices
BnCSM	No, there are there no informal (self organized) CCTT user groups that exchange best practice ideas within units or on post.
CoCdr	There are no informal information sharing meetings.
PL	No, there are no informal CCTT user groups that exchange best practice ideas within units or on post.
PSG	There are no informal CCTT user groups.

Ninety-six percent of the entire study subject population responded that no informal (user) groups for promoting and discussing CCTT use exist, 4 said that this happens at Battalion-level during training meetings.

SUBISSUE 6.4: Do Sites archive information about CCTT training events and make it available to users?

Position	SubIssue Finding
Site Mgt	Products prepared before exercises are archived and available. However, results of training activities are not.

SUBISSUE 6.5: Is there an Army-wide lessons learned repository for CCTT training?

Position	SubIssue Finding
Site Mgt	No.

DISCUSSION: The study team was surprised to find that there are no formal or informal efforts to promulgate good ideas for using the CCTT simulation. The exchange of ideas or discussions about how to best leverage CCTT only take place within Battalion unit structures. Sites work one-on-one with users in preparation for scheduled training and

sometimes serve as a conduit to pass on good ideas from other units. There is no site/installation effort to publish newsletters or websites that discuss innovative ideas or good practice. Additionally, there is no PM or TSM level effort to collect good ideas or lessons learned and make them available to any user, or if there is, neither units nor site managers know it exists. We believe the Army combat arms community is missing an opportunity here that could improve training and enhance combat readiness through disseminating valuable information. For example, we interviewed a battalion that had just completed using CCTT to train for mounted combat in cities. This followed a recent CG officer's call to discuss tactics, ideas and prepare his command for potential upcoming combat operations. Shortly thereafter we interviewed another Battalion who shared their headquarter building with the first unit. They told us they were wrestling with the same training challenge but had no idea about what their sister unit had done. An installation or system wide newsletter or website highlighting such ideas is warranted.

We also did not find any informal user groups that shared their experiences and ideas. This was surprising because this sort of phenomena occurs extensively on the Internet for individuals who get hooked on particular computer games. We encountered a handful of junior officers who could be classified as CCTT zealots. These particular Company Commanders and Platoon Leaders are absolutely convinced that CCTT is the best training they can give their units. They schedule any training they can at the site and are well known to site staff. But at neither installation did we find that these "power users" of CCTT even knew about each other or used any sort of media, including electronic, to compare notes and brainstorm ideas.

OTHER FINDINGS

The following summarizes additional items of key user feedback culled from specific questions or data collected during the interviews and surveys. Some of these are the direct result of the additional sub issues that are not directly derived from the six Study Issues. Several responded to focused interests of the study sponsors. Others are extracted from information provided to members of the study team during their visits to CCTT Sites, meetings with site staff, interviews of Battalion leadership, or from review of the input collected during the analysis phase:

a. All members of the chain-of-command rated the AAR capabilities in CCTT as critical to effective training. Interviewees seemed surprised that we would even ask about the contributions of the AAR. Many responded that it was absolutely essential to include this feedback step and that the recording and replay technology provided by the CCTT System is superior to what is available to them in any other training venue. In spite of high praise for the essentiality of the AAR step in conducting a virtual training exercise and the quality of the technology provided, most interviewees readily admitted that most officers at Battalion level and below lack the ability to lead an AAR effectively. They do not really know how to make the best use of the recording and playback technology and do not follow an established process designed to optimize learning value. We recommend that ARI investigate the state of AAR, as a learning process, throughout the Army, then develop and codify a body of knowledge and set of standard practices

applicable to AARs in general. The latter could be taught to junior leaders so they are all capable of adequately conducting reviews of unit training.

> All site management and senior leaders agreed that AAR capability of CCTT added value to training. Only 7 of 90 Company Leaders responded that the CCTT AAR capabilities are not used. When asked to assess the criticality of the AAR component to effective CCTT training, 12 of 20 senior leaders responded "very", other comments were no less positive (i.e., top of the line, more important than actual training, etc). Only one stated that the process was critical but not the technology. 89 of 90 Company leaders responded "yes" AAR was critical or a similar comment. The one negative response felt there was not enough focus on platoon level and below.

b. CCTT is being used at the company and platoon level extensively to prepare units for live fire table ranges. The ability of CCTT to support gunnery training is rated by users as one the key capabilities of CCTT. Units prefer to follow UCOFT training with CCTT simulated range table runs. At both installations, virtual ranges had been set up on terrain databases and used to prepare crews and platoons for live fire. The AAR facility serves as a virtual tower with non-training crews observing their peers. Playback is used to review performance. Those units, which had extensive previous experience using CCTT in preparation for Tables VIII or XII, claimed superior results for their units attributable to using CCTT. Platoon Sergeants were particularly strong supporters of CCTT use because the entire crew (vice UCOFT) is involved; some of them went so far as to suggest that with CCTT they do not see a need for UCOFT.

c. Users are satisfied with the fidelity of CCTT. The simulators (modules) themselves were not criticized except for the issue of an M1A1 unit having to train in M1A2 simulators retrofitted to M1A1 capabilities. Although most subjects of this study were content with the fidelity of the virtual environments (VE) provided by the terrain databases, there were some suggestions for enhancing its capabilities. Users rated the system-level capability to provide a virtual training experience that adequately supports task performance and accomplishing training objectives as acceptable. The system as designed and fielded provides an appropriate training environment to accomplish collective task training for close combat units.

> Eighty-four percent of 108 unit leaders responding stated that the CCTT simulator (module) fidelity is sufficiently realistic to meet their needs: 3 qualified their response (i.e., loader duties plugger, configuration issue).

> Sixty-eight percent of the 22 senior leaders responded that CCTT terrain databases have sufficient fidelity to meet their needs; shortcomings mentioned were built-up areas and a more extensive library of geographical areas. The NTC database was cited as particularly useful by 5 respondents.

Overall fidelity of the simulation was rated an average score of 3.5 by 56 Company Commanders and Platoon Leaders.

d. Users noted or recommended system level improvement to CCTT in two major areas. They would like the Army to procure and provide more simulators at each site so they can adequately train in any company team formation and at the full up Task Force level. Scout training was a consistently mentioned shortfall with a request for additional High Mobility Multipurpose Wheeled Vehicle (HMMWV) simulators at each site to support multiple section and platoon operations. The mechanized infantry units consistently pointed out their frustration with not being able to adequately train for dismounted operations using CCTT.

e. Users rate CCTT as able to provide positive transfer to improved performance in both combat and during field exercise. This point is made, to some degree, in the findings above, however it bears emphasis in that when asked directly, users expressed a high level of confidence in the ability of their unit to perform better in combat and field training as a result of using CCTT. Although this finding is not based upon any traditional analytic measures of training transfer, we can state unequivocally that users perceive a significant positive training transfer effect from training in CCTT.

All 22 senior leaders stated that CCTT enhances their unit's combat effectiveness. Company Commanders rating of CCTT training transfer of company METL to live exercises/combat averaged 3.9. Company leaders (90) rating CCTT transfer of platoon METL to live training/combat averaged 3.6.

20 of 22 senior leaders stated CCTT could support training to METL standards; 3 qualified their answers, 1 did not know, 1 said no. Company commanders' (15) rating of CCTT's ability to train their company METL averaged 3.9. Similarly, the 90 company leaders rating of CCTT ability to train platoon METL averaged 3.6.

f. There is no published training guidance at any level establishing usage levels or event-driven use of CCTT. In many units there is strong command encouragement to include its use in their training plans. This point is made in the discussions above, but is a clear take away from this study. There is not yet any formal published training guidance that the study team was able to uncover, at any level from Brigade up to Army level addressing the use of CCTT. We did not find any command or regulatory direction to close combat units requiring a level of annual or quarterly usage. Nor is there any published directive that could be classified as a gate requiring CCTT use prior to other training events. We anticipated that such published guidance, similar to requirements to use UCOFT prior to gunnery, were in place, but could not locate any. This finding does not imply that such requirements should exist, but simply recounts the results of our study efforts. We recommend that the TSM and ARI evaluate why there is not published guidance and if it is necessary.

g. The Commanders Integrated Training Tool (CITT) was developed to assist junior leaders plan and execute CCTT training. Questions regarding the availability and efficacy of this tool were added to the surveys at the request of ARI. CITT is available at fixed sites, but most company grade officers are not aware of it. Only 2 of 15 Company Commanders and 3 of 41 Platoon Leaders surveyed knew what CITT was, but they did make use of it. We recommend that ARI investigate more thoroughly the reason that CITT has not been adopted for use; this will reveal either specific shortcomings in the tool itself, if any, or its fielding strategy. This information would help plan a future procurement strategy for CITT, if warranted, as well as provide lessons-learned for future training support tool development.

h CCTT provides small unit leaders not only a training context to prepare for specific upcoming events, be they field exercises, NTC rotation, gunnery ranges or combat, and an environment in which to execute and train to standard on their unit METL but also an assessment environment in which they can determine what unit missions, tasks, METL or skills need remediation. Most company grade leaders use the outcomes of CCTT to plan future training.

> Seventy-eight percent of company grade officers from the 49 responding said they left a CCTT exercise with a specific plan of action to correct deficiencies identified during that training.

Observations and Recommendations

While the primary purpose of this research effort was to canvas a sample user community population using a developed survey and interview methodology to determine the answers to the six identified issues, the team, in the process of collecting and analyzing data, formulated personal and collective perceptions relative to the effectiveness and value of CCTT. We believe it is important to make such observations explicit in this section of the report. This list is not exhaustive and we would anticipate that ARI, PM-CCTT and TSM, CATT will form their own conclusions after reviewing findings contained in Appendix A and user responses captured in the delivered database.

a. CCTT is being integrated into unit level training strategies. Units consider it a valuable and critical resource that is especially effective for company and platoon level collective task training. While it is used extensively to train unit level collective tasks, the user community sampled has also adapted it and embraced it as a full crew gunnery skills training device. That it is effective as a gunnery trainer is evidenced by the fact that units who have previously used it in preparation for gunnery tables now include its use in their strategies and plans as mandatory preparatory event. Use of CCTT to conduct Task Force level training is not extensive, except when preparing for an NTC rotation. Again, units who have gone through an NTC rotation after using CCTT to help them prepare, now require its use as part of their train-up plans. Those plans include up to Task Force level exercises using the CCTT facility.

b. There is wide variability at the unit-level in both the planning phase and execution of exercises in CCTT. Some units, either explicitly or by default, use a hands-off approach; they leave the process of developing the training event strictly in the hands of Company Commanders and Platoon Leaders. Some units use a closely managed approach with strong involvement of the Battalion Command Group and S3 in monitoring preparation for a CCTT exercise. The conduct of the training event is mostly left up to the training unit, with, at most, a visitation to the site during an event as the extent of oversight from senior leaders. This is probably an effective way to create a secure environment in which junior leaders can operate without the pressure created by external monitoring, however the experience of more senior unit personnel is not being leveraged the way it should, particularly in the conducting of AARs. We did not find any explicit effort by brigade staffs to monitor or support CCTT training events.

c. Published command guidance for use of CCTT is non-existent and accounts for a disparity of usage levels between Battalions. Within a given battalion usage at the company and platoon level is fairly equal and a function of the importance the Battalion Commander and S3 in particular place on the value of CCTT. The Army should consider publishing or promoting standard requirements for the amount of training each combat arms unit conducts using CCTT or a gated strategy that requires its use prior to other events (e.g., ARTEP, NTC Rotation, etc.). Those units that have adapted it will not have a problem with such a requirement, while those units that object are probably the very ones that need encouragement to train using CCTT. Units that regularly use the system are enthusiastic supporters and develop creative ways to expand usage and capabilities. We also believe that the Battalion S3 is key. An effort should be made to insure they understand the capabilities of CCTT and that they need to be the primary advocate for its use. If there is specific training for officers assigned to S3 positions, we recommend the Army consider including this in the curriculum.

d. There is little doubt that close combat units, particularly those who have become regular users, believe strongly in the value of CCTT. Determining a way to measure for its explicit value to Army or units is not easy; quantifying that value is difficult if not impossible. First, these units are not willing to give up or offer to give up opportunities to train in actual vehicles in the field. This goes against the warrior ethic for leaders of close combat units and current generations of combat leaders will prefer actual live training to any other alternative. It will not be possible for the Army to rationalize a cost trade-off for using the simulations in terms of fuel or repair parts cost avoidance or OPTEMPO. The major justification for CCTT is the value it adds to combat preparedness and its availability when live training opportunities are limited for whatever reason.

e. Units do not make extensive use of supporting training material; this includes CITT and TSP. While there does not appear to be anything inherently wrong with these tools, users do not view them as critical to effective training or as a key step in their training development process. Future investment in training support material should be carefully considered; most users would prefer such resources be used to make the VE better or increase the availability of training devices (i.e., more modules in CCTT's case).

f. CCTT is a key contributor to effective unit performance during evaluated live training events or combat. Users are convinced of its importance, and the more a unit uses the system, the stronger proponents and advocates they become. A study of units returning from Operation Iraqi Freedom that assesses the value they would put on virtual training in general and CCTT in particular is recommended. Such a study could be included in other surveys and post combat reviews that certainly will be planned as part of debriefings and AAR.

g. Unit METL are key drivers for developing plans for CCTT training events, specific scenarios, and guiding AAR. There is some variability between units, but in general the use of METL is a key part of the Army training culture in regards to training in VE. We recommend that ARI and TRADOC continue to reinforce this valuable management tool and develop technology to assist units to monitor, evaluate, and document their METL proficiency levels. Tools or technology to support the AAR process in terms of METL performance is recommended.

h. There needs to be a better way to disseminate best practice and lessons learned about using the CCTT environment. Users and sites are developing creative ways to make use of the technology. Unfortunately, except for bilateral coordination between sites and units, these ideas are not shared between units at a local installation, let alone Army-wide. One of the study sponsors should initiate a program to facilitate the sharing of CCTT experiences and lessons learned. There are several potential approaches, among them would be a published newsletter or a website highlighting good ideas and unique applications.

i. This research developed and successfully employed a methodology for evaluating the effectiveness of a collective training device that is based on assessment of user acceptance and adoption of that device. Evaluating collective training technologies has been an unanswered challenge for the Army. It is a particular problem for its supporting corps of scientists and analysts who have worked to define and define quantitative approaches for assessing either individual and crew training devices or training programs (courses for example) designed to produce a qualified Soldier with a well defined set of skills or knowledge. Collective training device assessment may not be a totally intractable challenge, but developing quantitative instruments or methods is certainly problematic. The reality is that the Army (and other services) have and will continue to invest significantly in collective training systems, therefore qualitative methods, such as used in this study need to be developed and applied in order to determine how effective these technologies are in meeting user needs. This investigation should be considered a pilot of a qualitative approach and a sampling of the user population for a particular system, CCTT.

This methodology has proven successful in its ability to collect data, the analysis of which provides answers to specific issues. The success of this pilot approach should be extended. Within the CCTT community a larger sampling of users is certainly warranted. This study was limited due to time and funding to two sites that were some of the last fielded in CONUS. A more extensive study that collects similar data from all CONUS sites, overseas commands and mobile sites is warranted. It is not necessary to collect

feedback from all users but simply extend the sample population to include users (units) from more CONUS sites, at least one overseas site, and 2-3 mobile sites. We recommend if this research is expanded, that rather than paper surveys and individual one-on-one interviews, data be collected using web-based tools which could be hosted on a central Internet server and accessible from a unit or internet-connected desktop computer. The instruments we developed can readily be adopted for web-based use.

A second level approach that would extend and validate the methodology developed for this research by applying it to another collective training device or simulations is also warranted. There are other CATT programs that could serve as the next venue as could any of the Army constructive training simulations. A closely monitored development and employment of this methodology to assess users' acceptance and adoption of one or more other collective training aids, devices, or simulations would yield additional insight. This should lead to a generalization of the approach that could become a post fielding evaluation used as a standard step in the procurement process.

j. Company training in CCTT was almost exclusively conducted in armor or mechanized infantry pure company configurations rather than as combined arms teams with cross attached platoons. The only exception was an armored unit that had cross-attached one of its platoons with a mechanized infantry unit to support the latter while deployed to Kuwait on a security mission. All other companies, to the best of our knowledge, were configured during CCTT training exercises as pure armor or mechanized infantry. It will be a challenge to overcome this tendency, because of the difficulty of coordinating training schedules and cycles, as well as dealing with operational command and control in garrison. However, it is unrealistic to exclusively train in pure formations. Brigade level strategies to change this situation should be considered. This is one argument for getting Brigade Command Groups and their operations staff more involved in CCTT training than we observed in the units interviewed and surveyed for this study.

k. Our final recommendation relates more to the future of CCTT and its role in a transformed force instead of dealing with the specific use of it today. Joint Training is becoming more important than ever. Joint Task Forces capable of operating together down to ground combat units will be the future of combat, witness Operation Iraqi Freedom – combined operations with allies as well. To remain viable, CCTT must consider how it can and will integrate into joint training federations, the Joint National Training Capability in particular. There are technical, operational and training effectiveness issues that need to be investigated and understood. PM-CCTT should begin an effort to examine the potential role for CCTT in joint training and the implications on system modifications, program management, device utilization, and funding requirements.

Summary

The methodology for developing survey and interview instruments, their use in collecting input, and the analysis of that input to determine the value of a collective training device

were effectively demonstrated during this study. This methodology has general application to collective training technology and systems and could be further generalized and refined as a standard approach.

Specifically this project found that CCTT is performing the mission for which it was designed. Users have embraced the technology, are generally enthusiastic proponents as well as eager users, and have little criticism of the CCTT simulator technology, the overall training environment, or site operations. Units manage CCTT as a critical training capability that they view as an essential step or gate in preparation for major live training events. Users do not rate the importance of training in CCTT as highly as field training and are not willing to trade off any resources that support live training for access to CCTT. There is not specific command guidance requiring CCTT usage at any level, but users have self-imposed requirements for using the system to maintain METL proficiency and prepare for any evaluated or critical collective training event, such as an ARTEP or NTC rotation. Planning for CCTT exercises and command oversight of those activities varies in its rigor significantly by unit. There is little interaction or monitoring of actual training exercises above Battalion level. The canonical practice found by the study team is that CCTT training is scheduled, planned, and supervised by company grade officers. At the installations visited, CCTT is used predominantly to support company and below training; it is managed as a company-level resource to train platoons and the company team. In addition to company and below collective training on TTPs and missions, the study team observed significant use of the simulator to train gunnery skills.

The methodology developed should be leveraged to collect similar data on a larger population of users. The U.S. Army should sample those units stationed at installations that have had access to CCTT for a longer period of time and those that have recently been involved in combat operations. Surveying the former class of units would reveal if use of the system changes over time (e.g., do units, once the understand the full capabilities of CCTT, begin to use it more extensively for Task Force level training?). Surveying recently deployed units involved in combat operations will help us understand the role and value of virtual simulation technology in preparation for and conduct of actual combat operations. We recommend that the U.S. Army continue to monitor CCTT use, not simply on a schedule basis, but at the level of what unit training events are taking place and for user satisfaction with the capabilities it provides to improve unit proficiency.

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APPENDIX A.
Compiled Issue and Sub Issue Findings Master Table

The following pages are the compiled issue and sub issue findings for each position. As explained in Section III, the study team used a multi-pass analysis effort to study the responses. In the first pass, the data was analyzed to determine a consensus answer for each question for every position. These responses were then used to determine a finding for each sub issue by position. Sub issue findings were in turn used to determine a finding for each issue by position. A final pass examined the collective responses by issue by position to determine to the overall findings reported in Section IV.

Column definitions:

- Column A – Study Issues – Listing of the major Issue level questions this study answered. These were discussed in more detail in Section II.
- Column B – Sub issues – Listing of all the sub issues for each Issue.
- Column C – Consensus Answers – The consensus answer reached for each question listed in Column C.
- Column D – Sub issue Finding – Overall sub issue finding determined from consensus answers in column D
- Column E – Issue Finding

A	B	C	D	e
		Site Mgt		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.1 Are written procedures available?	Yes	Yes, written procedures are available.	Yes. General practice for unit interaction is the face-to-face mode. Site utilization data is provided to the PM CATT.
	1.2 Are sites following prescribed procedures?	Yes	Yes, but site staff interaction is critical.	
		Yes but site staff plays a key role in guiding them		
	1.3 Is a Training support package available to assist units integrate CCTT into training strategy and plans?	Varies by locale, most effort is put into face-to-face assistance	General practice has evolved such that face-to-face interaction is the predominant method to help units prepare.	
		Varies by site and unit, no firm policies in place		
	1.4 Is site utilization data available?	Utilization stats required by and provided to PM	Yes, site utilization data is provided to the PM.	
	1.5 Do prescribed procedures facilitate CCTT usage?	NO	The jury is split 50-50 on this one.	
		YES		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	Site Mgt is not really sure how important their capabilities are to units	Unit use varies depending on leadership. CCTT events get cancelled due to other priorities.	CCTT use is not standardized across units. Command involvement declines with rank. Unit cancellation is a problem.
		Cancellations are a problem, other taskings take priority too often		
		YES but is a function of the unit leadership		
	2.4 Do Commanders and Staff visit CCTT events training?	Yes	Yes, but the frequency drops off with seniority.	
		Yes but frequency of visits by Senior Field grade is low		
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.1 When in the planning cycle is CCTT training scheduled?	Generally company level leaders coordinating with the S3 shop	Generally company level leaders coordinating with the S3 shop	CCTT is scheduled about one month out via direct coordination with commanders and S3 staff.
	3.2 When in the training development cycle is a CCTT training event planned?	One month prior	About one month out with planning done in one-on-one meetings.	
		One-on-one meetings with units scheduled to use facility		
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.3 Who manages platoon CCTT training exercises? Company exercises?	Company leadership shows up to observe but do not get actively involved in platoon training	CO Cdr involvement is more as an observer, not a participant.	The junior officers appreciate CCTT more than their seniors. Active involvement drops off with rank.
		Not usually		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	NO Not currently	No, sites do not host user meeting to share training ideas.	No. Neither the local command nor the site have institutionalized a formal mechanism for sharing lessons learned.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	Installation G3 Sims but no one specific below that TOR is installation interface then G3 Staff	No, formalized interaction is only at the installation level.	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	None that are known None that are known	None known.	
	6.4 Do Sites archive information about CCTT training events and make it available to users?	Exercises are archived but results generally not reviewed or reused TSP's	Products prepared before exercises are archived and available. However, results of training activities are not.	
	6.5 Is there an Army-wide lessons learned repository for CCTT training?	NO	NO.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	Site contractor staff only facilitate use of technology and advise, units do their own AAR Yes	Yes, but site staff involvement in AARs is limited to technology and advice.	Although CCTT is generally perceived as beneficial to preparing for training events, no one can quantify this assertion. The gunnery applications need to be formally acknowledged. CCTT improvements should focus on TDB fidelity and battlefield sounds.
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	Acknowledge gunnery training capabilities, encourage more CA TF exercises, better fidelity of databases and sound	Formally recognize the gunnery utility of CCTT; encourage BN/TF level use; improve TDB fidelity and sound.	

		BnCdr		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.3 Is a Training support package available to assist units integrate CCTT into training strategy and plans?	Very helpful, from creating scenarios from scratch to adapting existing ones NO	Battalion Commanders find the sites very helpful from creating scenarios from scratch to adapting existing ones.	CCTT Fixed Site facilities appear to be operating within established PM-CATT policies and prescribed procedures. Battalion Commanders find the sites very helpful from creating scenarios from scratch to adapting existing ones. Prescribed procedures facilitate CCTT use.
	1.5 Do prescribed procedures facilitate CCTT usage?	YES NO	Prescribed procedures facilitate CCTT usage.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	Primarily green, with some amber/red	Battalions use CCTT primarily during green training cycle, but some in amber and red cycles. However, they do not require a specific level of use.	Battalion Commanders believe that CCTT positively contributes to combat readiness. It is a key event in planning for NTC rotation and ARTEPs. CCTT training increases METL proficiency in combat arms units and has no negative impact on unit readiness.
		NO, although one used for Tables VIII & XII prep		
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	YES	Battalion Commanders consider CCTT training as a key event in planning for NTC rotation or ARTEPs.	
		YES		
	2.3 Do Commanders monitor usage of CCTT?	Mostly NO, one YES	Most Battalion Commanders monitor CCTT training personally of through their S3s and S2s. A significant portion of battalions do not require the companies to report on CCTT use.	
		YES, mostly BN CO/S3/S2		
	2.4 Do Commanders and Staff visit CCTT events training?	YES	Battalion Commanders and their staffs routinely visit CCTT training events.	
		Most within last month		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	2.5 Does CCTT training positively transfer to ability to perform to METL standards?	Every 4-8 weeks	Battalion Commanders believe that CCTT training increases METL proficiency in their units.	
		YES		
	2.6 Would commanders use CCTT to prepare for or rehearse a specific combat mission?	YES, depending on TDBs and availability of actual equipment	Depending on TDBs and availability of actual equipment, Battalion commanders would use CCTT to prepare for or rehearse a specific mission.	
		YES		
	2.7 Does CCTT usage have any negative impact on unit readiness?	NO, but watch out for artificial levels of control not feasible in field	Battalion Commanders believe that CCTT use has no negative impact on unit readiness; however, units should be aware of artificial control with CCTT not feasible in the field.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.1 When in the planning cycle is CCTT training scheduled?	Quarterly	Battalion Commanders schedule CCTT training quarterly.	Battalion Commanders consider CCTT a critical training resource but not as important as field training. They identify CCTT as a specific resource to address training and METL deficiencies. Battalions plan CCTT training based upon METL, training deficiencies, specific tactical scenarios, operations plans and upcoming field exercises. Company and platoon CCTT training plans are usually reviewed by Battalion Commanders and their S3s. Battalion Commanders schedule CCTT training quarterly. Specific CCTT training events are planned 6-8 weeks out and scenarios are developed two weeks out. There are no quotas placed on battalions, companies, or platoons for minimum level of CCTT use.
	3.2 When in the training development cycle is a CCTT training event planned?	6-8 weeks out	Specific CCTT training events are planned 6-8 weeks out and scenarios are developed two weeks out.	
		At least a couple of weeks out		
	3.3 Is CCTT identified as a specific resource to address training deficiencies?	Yes, quarterly	Battalion Commanders identify CCTT as a specific resource to address training and METL deficiencies.	
		YES		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
		Yes, to a limited extent ... they are developing best applications		
	3.4 Do units (at any level) prescribe a minimum amount of CCTT usage?	NO	Battalion Commanders do not place a quota on CCTT usage within their units.	
	3.5 Do units plan CCTT training based upon METL, specific tactical scenarios, operations plans, and/or upcoming field exercises?	All, especially mission related items (METL, training deficiencies)	Battalions plan CCTT training based upon METL, training deficiencies, specific tactical scenarios, operations plans, and upcoming field exercises.	
	3.6 Are plans for CCTT training exercises reviewed by the Chain of Command?	YES, mostly at BN level by CO and S3	Company and platoon CCTT training plans are reviewed by Battalion Commanders and their S3s.	
	3.7 Is CCTT considered a key training resource similar to ranges, ammunitions, OPTEMPO?	YES, but not as critical as field training As important or slightly less	Battalion Commanders consider CCTT as a critical training resource. However, it is not quite as important as field training.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.1 Do Co Cdrs plan company level CCTT exercises in addition to scheduled platoon training?	At both levels, trend seems to be toward platoon level	Battalion Commanders relate that Company Commanders plan company level CCTT exercises in addition to scheduled platoon training.	Battalion Commanders that junior officers use CCTT at the company and platoon levels. In some instances, platoon leaders request and arrange to use CCTT on their own. Company Commanders normally manage company and below CCTT training with some form of battalion oversight.
	4.2 Do Platoon Leaders request or arrange to use CCTT site on their own?	YES	Battalion Commanders relate that platoon leaders request or arrange to use CCTT sites on their own.	
	4.3 Who manages platoon CCTT training exercises? Company exercises?	Mostly company COs with some form of BN oversight	Company Commanders manage platoon CCTT training exercises usually with some form of battalion oversight.	
	4.6 What use of TTPs are made by unit leaders in planning a CCTT exercise?	YES	Units training in CCTT use TTPs as part of their planning process.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
5. Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?	5.1 Is there a cost or value metric that could be used to measure CCTT's role in Army Readiness? (i.e., ammunition saved, OPTEMPO reduced)	NO, skills to do this are not at their level	Battalion Commanders cannot quantify the potential contribution of CCTT to their unit's readiness. They do not have the skills at their level to accomplish this.	Battalion Commanders feel that they cannot assess CCTT's contribution to Army readiness at their level. The availability of CCTT does allow battalions to reduce consumption of other resources; however, current management controls mitigate against using that savings to reduce consumption of other resources.
	5.2 Are units that use CCTT reducing consumption of any resources?	YES, mileage plus safety considerations	Battalion Commanders feel that the availability of CCTT allows their units to reduce consumption of other resources.	
	5.3 Do unit commanders perceive that using CCTT will allow them to re program or save any funds?	NO, current management controls mitigate against that	Battalion Commanders cannot reprogram or save funds because current management controls mitigate against this.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	Not to date	Battalion Commanders relate that CCTT sites do not host user meetings to share training ideas and information about best practices.	Battalion Commanders were not aware of any innovative approaches to using the system appropriate for sharing Army-wide.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	YES, master gunner or assistant S3 NO	Battalion Commanders normally use an assistant S3 or Master Gunner to oversee CCTT use and assist junior leaders. Brigades do not have staff officers who oversee simulation based training.	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	NO	Battalion Commanders are not aware of any informal CCTT user groups that exchange best practice ideas within units or on post.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	YES, most emphatically Very critical to successful exercises	Battalion Commanders emphatically believe that AAR capability is critical to successful CCTT training exercises.	Battalion Commanders emphatically believe that AAR capability is critical to successful CCTT training exercises. The task environment provided by CCTT is adequate to train to METL standards. MOUT, plow employment, and HEMMT training tasks could be trained to standard in CCTT but currently are not. Training transfer from CCTT to evaluated filed exercises can be measured; CCTT has directly contributed to success in command & control rehearsal and NTC preparation. CCTT simulator fidelity is adequate to meet their training needs; however, they recommend that more simulators and variety in TDBs be added to the sites. To produce the largest improvements in its effectiveness CCTT needs at least a company set of tank and bradley each, improved mortar simulation, and ability to play other BOSs.

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	YES	Battalion Commanders feel that CCTT simulator fidelity is adequate to meet their training needs. However, they recommend that more simulators and variety in TDBs be added to the sites.	
		YES, some TDB limitations		
		Need more simulators and more variety in TDBs		
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	YES	Battalion Commanders believe that the task environment provided by CCTT is adequate to train to METL standards. They state that MOUT, plow employment, and HEMMT training tasks could be trained to standard in CCTT but currently are not.	
		YES, for MOUT, plow employment, HEMMT training		
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	C2 rehearsal and NTC prep	Battalion Commanders believe that training transfer from CCTT to evaluated filed exercises can be measured. CCTT has directly contributed to command & control rehearsal and NTC preparation.	
		YES, exceeds actual field exercise for some combat tasks, getting ready for coming war		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	Need more simulators, at least a company set of tank & Bradley each, improve mortar simulation (simulator?), play of other BOSs	Battalion Commanders recommend that to produce the largest improvements in its effectiveness CCTT needs more simulators, improved mortar simulation, and to play other BOSs.	

		BnS3		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.3 Is a Training support package available to assist units integrate CCTT into training strategy and plans?	YES, prepare crews to use simulators, planning process & scenario preparation	Battalion S3s relate that Training Support Packages are available and help crews to use simulators, implement planning processes, and prepare scenarios.	Battalion S3s comments indicate that CCTT Fixed Site facilities are being operated within established PM-CATT policies and prescribed procedures.
		Varies from unit file of scenarios to site contractors to BN Mstr Gnr		
	1.5 Do prescribed procedures facilitate CCTT usage?	YES, very helpful	Battalion S3s find that prescribed procedures are very helpful in facilitating CCTT usage.	
		NO		
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	Mostly GREEN some AMBER	Battalions use CCTT mostly during green training cycle, but some in amber cycles. However, they do not require a specific level of use.	Battalion S3s feel that CCTT contributes to combat readiness. Battalions use CCTT during green training cycle and some in amber cycles; however, they do not require a specific level of use. CCTT is considered a key event in preparing for NTC rotations and ARTEPS. Battalions monitor CCTT use by its units through personal visits of the commander and S3 staff. Battalion S3s believe that CCTT increases METL proficiency. Given the appropriate terrain data bases, S3s would use CCTT to prepare for or rehearse specific missions. They believe that CCTT has no negative impact on unit readiness.
		NO		
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	YES	Battalion S3s consider CCTT as a key event in preparing for NTC rotations or ARTEPS.	
		YES		
	2.3 Do Commanders monitor usage of CCTT?	NO	Battalion S3s monitor usage of CCTT through personal visits and S3 staff visits	
		YES, either S3, his assistant, or Mstr Gnr		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	2.4 Do Commanders and Staff visit CCTT events training?	YES YES, from yesterday to 3 months Varies from every time to quarterly	Battalion Commander and his staff visit CCTT training events although the frequency varies significantly between units.	
	2.5 Does CCTT training positively transfer to ability to perform to METL standards?	YES	Battalion S3s believe that CCTT increases METL proficiency in their units.	
	2.6 Would commanders use CCTT to prepare for or rehearse a specific combat mission?	YES, good prep for Co/Tm to work together YES	Battalion S3s would use CCTT to prepare for or rehearse a specific if appropriate terrain data bases were available.	
	2.7 Does CCTT usage have any negative impact on unit readiness?	NO ... but is it too easy .. no distractors like weather?	Battalion S3s find that CCTT use has no negative impact on unit readiness.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.1 When in the planning cycle is CCTT training scheduled?	Usually 2-3 months out	Battalion plan the use of CCTT quarterly.	Battalions plan the use of CCTT on a quarterly basis. Specific CCTT training events are planned 4-6 weeks out based primarily on METL deficiencies. There is no consensus on battalions reviewing CCTT training plans for companies and platoons; some do not review plans at all while other unit plans are reviewed by the Battalion Commander and/or the S3/staff. Battalion S3s see CCTT as a key training resource second only to field and gunnery training.
	3.2 When in the training development cycle is a CCTT training event planned?	4-8 weeks out 4-8 weeks	Battalion plan CCTT training events 4-8 weeks out.	
	3.3 Is CCTT identified as a specific resource to address training deficiencies?	YES, either weekly or quarterly YES NO, must use with field training	Battalion S3s identify CCTT as a specific resource to help address training or METL deficiencies. However, CCTT cannot be used to train tasks to standard and must be used with field training.	
	3.4 Do units (at any level) prescribe a minimum amount of CCTT usage?	NO	Battalion do not set CCTT training quotas.	
	3.5 Do units plan CCTT training based upon METL, specific tactical scenarios, operations plans, and/or upcoming field exercises?	METL	Battalions plan CCTT training based on METL deficiencies.	
	3.6 Are plans for CCTT training exercises reviewed by the Chain of Command?	From "no one" to BN CO/S3/Mstr Gnr	There is no consensus on battalions reviewing CCTT training plans for companies and platoons. Some units do not review plans, while others are reviewed by the Battalion Commander and/or S3 staff.	
	3.7 Is CCTT considered a key training resource similar to ranges, ammunitions, OPTEMPO?	YES Very important, but secondary to this list	Battalion S3s consider CCTT a key training resource, but secondary to ranges, ammunition, and OPTEMPO.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.1 Do Co Cdrs plan company level CCTT exercises in addition to scheduled platoon training?	Both	Company Commanders plan both company and platoon training.	Junior officers and non-commissioned officers consider CCTT a valuable resource. Companies conduct both company and platoon level training in CCTT. In some companies platoon leaders request and arrange to use CCTT on their own. There is no set pattern for who manages platoon training exercises; it varies from "no one" to S3/Master Gunner. Companies and platoons typically use CCTT site TTPs when planning exercises
	4.2 Do Platoon Leaders request or arrange to use CCTT site on their own?	YES	Platoon Leaders request and arrange to use CCTT sites on their on.	
	4.3 Who manages platoon CCTT training exercises? Company exercises?	Ranges from "no one" to S3/Mstr Gnr	There is no set pattern for who manages platoon CCTT training exercises. It varies from "no one' to S3/Master Gunner.	
	4.6 What use of TTPs are made by unit leaders in planning a CCTT exercise?	YES	Units typically use CCTT site TTPs in planning CCTT exercises.	
5. Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?	5.1 Is there a cost or value metric that could be used to measure CCTT's role in Army Readiness? (i.e., ammunition saved, OPTEMPO reduced)	Not sure	Battalion S3s are not aware of any cost or value metric that could be used to measure CCTT's role in Army Readiness.	Most S3s feel that CCTT's role in Army readiness can be measured, but they are not aware of any specific metrics. They feel that battalions are able to reduce consumption of other resources by using CCTT and that this savings could be passed on to address other units needs.
	5.2 Are units that use CCTT reducing consumption of any resources?	YES	Units using CCTT are able to reduce consumptions of other resources	
	5.3 Do unit commanders perceive that using CCTT will allow them to re program or save any funds?	Should be able to ... not sure how	Battalion S3s believe that using CCTT should allow them to save money to use on other units needs, but are not sure how that can be done.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	NO	The CCTT sites do not host user meetings to share training ideas and information about best practices.	S3s are not aware of any formal or informal means to share training ideas and best practices information within their unit, among other battalions, or across CCTT sites.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	If so, it's the Asst S3 or Mstr Gnr NO	There is no staff officer at brigade level to oversee CCTT use. At battalion, the Assistant S3 or Master gunner provides oversight and assistant to junior leaders.	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	NO, not as a stand alone event	There are no informal (self organized) CCTT user groups that exchange best practice ideas within units or on post.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	YES Yes, it is critical	The AAR capability is critical to achieving training effectiveness in CCTT.	The AAR capability is critical to achieving training effectiveness in CCTT. CCTT simulators are sufficiently realistic to meet Armor, Mech Infantry, and Armored Cavalry training needs. The terrain data bases are sufficiently realist; units find the NTD TDB to be especially helpful with preparing for their NTC rotation. Units want an even greater variety of TDBs. Units would like to see CCTT incorporate a vehicle marking system, eliminate vehicle rollover. In general, the task environment provided by CCTT is adequate to train to METL standards. Tasks that could be trained to standard in CCTT but currently are not include deliverate breach, logistics, and dismounted infantry tasks. Battalion S3s could not identify any way to measure training transfer from CCTT to evaluatied field exercises or combat. However, they did identify a variety of ways that CCTT training enhances combat effectiveness to include coordination and command & control. Battalion S3s recommended changes to CCTT to produce the largest improvement in its effectiveness include more TDB, more sims, improve DI, mines and mine clearing [MICLIC].
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	YES YES, love NTC TDB, want greater variety of TDB geography vehicle marking system, eliminate vehicle rollover, interaction with other CA & CS	CCTT simulators are sufficiently realistic to meet Armor, Mech Infantry, and Armored Cavalry training needs. The terrain data bases are sufficiently realist; units find the NTD TDB to be especially helpful with preparing for their NTC rotation. Units want an even greater variety of TDBs. Units would like to see CCTT incorporate a vehicle marking system and eliminate vehicle rollover.	
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	YES ... need UCOFT? Deliberate Breach, logistics, DI tasks	In general, the task environment provided by CCTT is adequate to train to METL standards. Tasks that could be trained to standard in CCTT but currently are not include deliberate breach, logistics, and dismounted infantry tasks.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	NO, nothing specific	Battalion S3s could not identify any way to measure training transfer from CCTT to evaluated field exercises or combat. However, they did identify a variety of ways that CCTT training enhances combat effectiveness to include coordination and command & control.	
		YES, variety of situations, coordination and C2		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	more TDB, more sims, improve DI, mines and mine clearing (MICLIC)	Battalion S3s recommended changes to CCTT to produce the largest improvement in its effectiveness include more TDB, more sims, improve DI, mines and mine clearing [MICLIC].	

		BnXO		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.5 Do prescribed procedures facilitate CCTT usage?	YES, great support	Site procedures facilitate CCTT use	CCTT Fixed Site are being operated IAW PM established policies and users are satisfied with those procedures.
		NO, some flexibility on unit time lines for input, shorten refresher training		
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	mostly GREEN or AMBER	Units integrate CCTT usage into their training plans but there are no prescribed usage levels	Close Combat Battalion-size units manage CCTT as a critical resource that directly contributes to their combat readiness. Unit leaders believe there is a positive transfer to METL performance, its use is critical step in preparation for field exercises, and that CCTT is capable of directly preparing them for combat missions.
		NO, not formally, event drives utility of CCTT		
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	YES, prep for PLT live fire, MOUT site use, and NTC prep	CCTT is a critical step in train up for live exercises or evaluations	
		YES		
	2.3 Do Commanders monitor usage of CCTT?	NO, one reports all sim usage at QTB	CCTT usage is not a critical event monitored by Cdrs, Other Bn Staff members check on training though.	
		Usually staff function (S3, XO, Asst S3), but some CO		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	2.4 Do Commanders and Staff visit CCTT events training?	YES	XO's have visited site, but generally are not involved in exercise or oversight of those exercises	
		Wide variation ... weeks to months		
		Not as XOs, but they did as S3s		
	2.5 Does CCTT training positively transfer to ability to perform to METL standards?	YES, especially when integrated into training model	CCTT Training positively transfers to improved METL performance.	
	2.6 Would commanders use CCTT to prepare for or rehearse a specific combat mission?	YES	CCTT would be used to prepare for specific combat missions and that rehearsals done if TDBs were available for the operational area	
		YES, but beware of desensitization ... easy to leave wounded buddy or disabled vehicle in simulated environment		
	2.7 Does CCTT usage have any negative impact on unit readiness?	Shooting too easy on simulators, scouts don't dismount, excessive usage impacts CVC maintenance	Negative impacts from CCTT are primarily due to technology limits, not simulator design	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.1 When in the planning cycle is CCTT training scheduled?	2-3 months out	CCTT training is scheduled 2-3 months in advance	CCTT events are integrated into unit training strategies and planning. Exercises are generally a well-planned training event beginning 2-3 months prior with detailed planning one month prior. Training plans are METL-based, reviewed in detail by some units and not at all by others. Although there are no prescribed usage requirements, the system is a critical resource but not as key to their training management as live training resources.
	3.2 When in the training development cycle is a CCTT training event planned?	4-6 weeks 1-8 weeks	CCTT Training Events are planned about one month prior	
	3.3 Is CCTT identified as a specific resource to address training deficiencies?	YES, mostly at QTB YES YES, but not documented	CCTT is managed as a critical resources to address unit training deficiencies	
	3.4 Do units (at any level) prescribe a minimum amount of CCTT usage?	NO	There are no prescribed requirements for usage of CCTT	
	3.5 Do units plan CCTT training based upon METL specific tactical scenarios, operations plans, and/or upcoming field exercises?	METL, upcoming exercise	METL are used as basis for planning CCTT Training Exercises	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	3.6 Are plans for CCTT training exercises reviewed by the Chain of Command?	Range from NONE at BN level to S3 & CO	Some units review plans for CCTT training closely while others do not review them at all	
	3.7 Is CCTT considered a key training resource similar to ranges, ammunitions, OPTEMPO?	Varies ... 3 YES to 2 NO Less important than traditional resources	CCTT is not as critical a resource to units as live training facilities and resources	
5. Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?	5.1 Is there a cost or value metric that could be used to measure CCTT's role in Army Readiness? (i.e., ammunition saved, OPTEMPO reduced)	NO	There is no easy way to measure CCTT's direct contribution to unit readiness.	Although CCTT is viewed as a critical resource there is no easy way to computer the direct benefits analytically or to make use, at the unit level, of savings accrued if that were feasible.
	5.2 Are units that use CCTT reducing consumption of any resources?	Ammo savings, OPTEMPO (miles & maintenance) savings	CCTT availability has potential to reduce other resources	
	5.3 Do unit commanders perceive that using CCTT will allow them to re program or save any funds?	NO, BDE level control mitigates against savings at the BN level	Battalions cannot directly benefit (re program) savings from using CCTT	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	NO, this happens when unit prepares exercise packet	Sites do not conduct user-level group meetings to disseminate LL or good ideas.	There are innovative uses of CCTT and the analysis team encountered several of them discussed elsewhere in the report, however, no efforts are being made to exchange key information between units and little effort except in some Battalion within their S3 shops is put into cultivating and disseminating expertise and lessons learned to help guide users of the system.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	S3 or his Assistant NO	Battalions staff support CCTT training at S3 Shop level but no one at Brigade level has this duty	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	NO	There are no CCTT User groups that share best practices	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	YES	AAR is critical capability in the system	Users believe the AAR technologies available in CCTT are critical to successful training. Users rate the fidelity and task environment high with a consensus perception that there is positive training transfer to performance in the field or combat. They main changes to the system they would like to see are increased availability of the site and increased numbers of simulators.
		Very Critical		
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	YES	Users are satisfied with the fidelity of CCTT and its support of training	
		YES		
		Need M1A1 sims, commo down too much, add PLUGGER, site provided CVCs		
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	YES	CCTT replicates most close combat tasks up to METL performance standards	
		Improve engineer play (mobility/countermob) & scout tasks		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	YES, as witnessed by NTC and Mountain Strike Exercise, improved gunnery (especially for new junior leaders)	Users believe that CCTT positively transfers to improved performance in field exercises and combat	
		YES, C2 and NTC prep, maneuver & reporting in general		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	Extended daily hours of operation, HMMWV sims for scouts, replace UCOFT with CCTT (enhance CCTT as needed), site email to S3s to notify them of unscheduled openings, TDBs for local training areas	Users would like sites to increase operational hours, more HMMWV simulators and make it fully capable of training gunnery skills to replace COFT	

		BnCSM		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.5 Do prescribed procedures facilitate CCTT usage?	YES NO	CSMs feel that prescribed procedures facilitate CCTT usage.	Yes, CCTT Fixed site facilities are being operated in accordance with established PM-CATT policies and procedures.
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	Mostly GREEN, some AMBER/RED NO to some form of encouraged use	Yes, while there is no requirement on use, units integrate CCTT as much as possible into their training strategy.	Yes, CSMs believe that CCTT contributes to the combat readiness of using units. They consider it a key event in upcoming training, monitor its usage, and regular visit training events. They feel CCTT positively transfers to ability to perform METL standards, and does not have any negative impact on unit readiness.
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	YES, NTC prep, gunnery YES	Yes, CCTT is considered a key event in preparing for upcoming training.	
	2.3 Do Commanders monitor usage of CCTT?	YES, BN CO/CSM/S3	Yes, commanders monitor usage of CCTT.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	2.4 Do Commanders and Staff visit CCTT events training?	YES Within last 1-4 weeks Varies ... every time to only once	Yes, commanders and staff regular visit CCTT training events.	
	2.5 Does CCTT training positively transfer to ability to perform to METL standards?	YES	Yes, CCTT training positively transfers to ability to perform METL standards.	
	2.6 Would commanders use CCTT to prepare for or rehearse a specific combat mission?	YES	Yes, commanders use CCTT to prepare or rehearse for specific combat missions.	
	2.7 Does CCTT usage have any negative impact on unit readiness?	NO	No, CCTT usage does not have any negative impact on unit readiness.	
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.1 When in the planning cycle is CCTT training scheduled?	1.5 to 3 months out	CCTT training is scheduled in the planning cycle between 1.5 to 3 months out.	CCTT training is scheduled between 1.5 to 3 months out in the planning cycle, and from 2-8 weeks in the training development cycle. CCTT is identified as a specific resource to address training deficiencies. Plans for CCTT training are reviewed at the battalion level, mostly by the BnCdr and S3.
	3.2 When in the training development cycle is a CCTT training event planned?	3-8 weeks 2 -8 weeks	CCTT training events are planned from 2-8 weeks out in the training development cycle.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	3.3 Is CCTT identified as a specific resource to address training deficiencies?	Yes, weekly	Yes, CCTT is identified as a specific resource to address training deficiencies.	
		YES		
		YES, squad level SOPs, NBC, C2		
	3.4 Do units (at any level) prescribe a minimum amount of CCTT usage?	NO	No, units do not prescribe a minimum amount of CCTT usage.	
	3.5 Do units plan CCTT training based upon METL, specific tactical scenarios, operations plans, and/or upcoming field exercises?	METL, identified training deficiencies	Units plan CCTT training based upon METL and identified training deficiencies.	
	3.6 Are plans for CCTT training exercises reviewed by the Chain of Command?	BN Level, BN CO/S3 mostly	Plans for CCTT training exercises are reviewed at the battalion level, mostly by the BnCdr and S3.	
	3.7 Is CCTT considered a key training resource similar to ranges, ammunitions, OPTEMPO?	YES	Yes, CCTT is considered a key training resource.	
		Very important ... equally important if resources constrained		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
5. Can CCTT's contribution to Army readiness be assessed for its value and its cost effectiveness?	5.1 Is there a cost or value metric that could be used to measure CCTT's role in Army Readiness? (i.e., ammunition saved, OPTEMPO reduced)	YES, this should be possible, but not known to them	Yes, a cost or value metric could be used to measure CCTT's role in Army Readiness, but one is not known to them.	Yes, CSMs believe CCTT's contribution to Army readiness can be accessed for its value and cost effectiveness, though a specific metric is not known to them. The perceive that using CCTT reduces consumption of mileage, ammunition, and funds.
	5.2 Are units that use CCTT reducing consumption of any resources?	YES, mileage, ammo	Units that use CCTT reduce consumption of mileage and ammunition.	
	5.3 Do unit commanders perceive that using CCTT will allow them to re program or save any funds?	YES	Yes, CSMs perceive that using CCTT will allow them to reprogram or save funds.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	NO, nothing formal	Sites do not host formal user meetings to share training ideas and information about best practices.	No, there are no innovative approaches to using the system appropriate for sharing Army-wide. There are neither formal nor informal CCTT user groups to share training ideas and information about best practices.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	BN S3 & XO NO	Yes, units use the BnS3 and XO to oversee CCTT use and assist junior leaders.	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	NO, but some informal one-to-one	No, there are there no informal (self organized) CCTT user groups that exchange best practice ideas within units or on post.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	YES	Yes, the site AAR capability is critical to training effectiveness.	Users feel AAR capability is critical to training effectiveness. CSMs believe the CCTT simulator fidelity and task environment are adequate to meet training needs. While, commanders do not have any specific way to measure CCTT, they do believe that CCTT greatly enhances training effectiveness. CSMs feel that improving engineers, FIST, logistics, and media would produce the largest improvements to CCTT
		YES, critical		
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	YES	Yes, CCTT simulator fidelity is adequate enough to meet training needs of heavy units.	
		YES, NTC TDB for example		
		NO		
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	YES	Yes, the task environment provided by CCTT is adequate enough to train to METL standards.	
		NO, maybe MOUT		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	NO, but ... used as training preparation	Commanders didn't have any specific way beyond training preparation to measure training transfer from CCTT to evaluated field exercises. However, they do believe CCTT training enhances combat effectiveness.	
		YES, especially with actual TDB		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	Improve engineers, FIST, logistics, medics	Improving engineers, FIST, logistics, medics are changes that would produce the largest improvement in CCTT training effectiveness.	

		CoCdr		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.3 Is a Training support package available to assist units integrate CCTT into training strategy and plans?	Y-7; N-8: Only 50% of Co Cdrs aware of TSPs	Commanders aware of the TSPs use them and find them helpful. However, only about half of them are aware, so dissemination of this information (that TSPs exist) is a problem.	Yes, the sites are operating IAW both the letter and the spirit of PM-CATT policies and procedures. Unit commanders are most complimentary of site staff and the assistance the render and their flexibility in meeting unit time demands.
		Cdrs aware of TSP's generally use them to develop their Co Tng Strategy		
		Co Cdrs aware of TSP use them to develop training plans		
		TSP support tng strategy development well		
		TSP support conduct of Tng well		
		TSPs development of Co training plans well		
		TSPs support Platoon Tng very well		
		Co Cdrs do not use CCTT for collective tng as much as they would like due to other priorities		
		TSPs could be more specific - provide them directly to units		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	1.5 Do prescribed procedures facilitate CCTT usage?	Avg 3.7 Co Cdrs know the process and procedures to use CCTT	Yes. Commanders get the bulk of their knowledge directly from the site staff.	
		Co Cdrs learn how to use CCTT primarily from the Site Staff		
		Avg 3.9 Site procedures are helpful in planning training		
		Avg 4.0 Site Procedures are helpful in conducting training		
		Site Staff support and orientation (crew certification) programs are rated highly by Co Cdrs		
		Site procedures do not detract from training		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	CCTT is not managed as an integral or key component of overall training strategy but primarily viewed as an additional resource	CCTT is used as an augmentation to training, but not as an integral part as more traditional training venues are.	Although CCTT has not become as integrated as more traditional training assets, the concurrence is strong that CCTT does help units prepare for combat. This is a "gut feeling" based on how units have done after training in CCTT. Units acknowledge that they do not have the capacity to develop hard data to support this assessment.
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	YES, Co Cdrs use CCTT to train up for major events	Yes, CCTT is used as a prefield training tool for gunnery, NTC, and ARTEP.	
		CCTT is used to conduct prepatory training for live events ranging from gunnery tables to NTC exercise		
	2.4 Do Commanders and Staff visit CCTT events training?	Avg 2.6, Bn Cdrs seldom visit CCTT Tng	At the BN level, visits by the commander are rare as the S3 is the primary BN level staff member involved and active. CO Cdrs tend to visit more often. Xos and 1SGs tend to not be involved in the CCTT training.	
		Avg 2.4 Bn Staff seldom visit CCTT Tng		
		S3 are most frequent Bn Staff to visit CCTT Tng		
		Avg 3.7 Co Cdrs sometimes participate in platoon tng		
		Cdrs assume OC role when involved with Plat Tng		
		Avg 3.1 XOs and 1SGs participate in CCTT training infrequently		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
		XOs and 1SGs participate in CCTT training infrequently		
	2.6 Would commanders use CCTT to prepare for or rehearse a specific combat mission?	Units use CCTT for specific mission preparation	Yes, CCTT is used to prepare for specific missions like NTC and Table XII.	
		Specific missions trained for in CCTT are NTC, Table XII		
		Planned Operations are the specific combat mission rehearsed in CCTT		
	2.7 Does CCTT usage have any negative impact on unit readiness?	Most Cdrs do not see any negative training effects	No. No instances of negative training noticed by the chain of command.	
		No relevant examples of bad habits (negative training) provided by respondents		
		No negative impact on readiness results from using CCTT		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.2 When in the training development cycle is a CCTT training event planned?	CCTT Exercises are scheduled 1-3 months out	CCTT is scheduled in the quarter in which it will be used.	CCTT training is scheduled according to each unit's assessment in the utility of CCTT. Integration of CCTT has not attained the institutionalized level of more traditional assets (i.e., units are not required to conduct CCTT training).
	3.4 Do units (at any level) prescribe a minimum amount of CCTT usage?	No min reqt for plat usage	No minimums are set at any level.	
	3.6 Are plans for CCTT training exercises reviewed by the Chain of Command?	Most Co Cdrs review platoon plans for CCTT training	Most of the exercise reviews occur at the company level. Battalion review is limited.	
		PL's plan platoon exercises and Co Cdr's review		
		There is generally limited Bn level review of Plat Tng in CCTT		
		Reviews of Plat Plans when conducted are at tng obj and scenario level		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.1 Do Co Cdrs plan company level CCTT exercises in addition to scheduled platoon training?	1/3 of Companies only use CCTT for Plat Tng	Most common usage is at the platoon level, but it is used at the company level.	Strongest support for CCTT is found at the PLT and CO levels. BN involvement is significantly less, and usually restricted to the S3.
		CCTT is used 2-4 times per year		
		METL is generally used to select Co level tasks to train but some Cdrs rely on Site Staff advise		
	4.2 Do Platoon Leaders request or arrange to use CCTT site on their own?	Scheduling of CCTT varies by unit, in many units Companies do it on their own	Platoon usage varies greatly, but in general companies and platoons schedule CCTT on their own.	
		About half of the platoons use CCTT on their initiative and half do not		
		Platoons use CCTT when they are in charge mostly to train collective tasks		
	4.3 Who manages platoon CCTT training exercises? Company exercises?	Half of units surveyed have S3 staff planning Co training and half say it is done at company level	In most units, the S3 and company commander work together in developing CCTT exercises.	
		Mostly METL determines Platoon level tasks to be trained but pending exercises are a driver for some units		
		S3 and Co Cdr plan Platoon level CCTT tng		
		Tasks to be trained in Plat Exercises are METL-based		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	4.4 Do Company Commanders use CCTT to mentor and train their Platoon Leaders?	Generally AAR's for Platoons are conducted by Co Cdr, sometimes S3 or Bn Cdr	PLT AARs are usually run by the CO Cdrs. This varies greatly between commands.	
		No consistent answer, training the trainer on how to schedule CCTT use varies by unit		
		Same as Q50 for planning exercise		
		Co Cdrs trains PL on running CCTT Exercises but not exclusively		
	4.5 Do unit leaders believe that there are effects from using CCTT that have a potential negative impact on individual, crew or unit proficiency?	CCTT is seen as having a positive impact on proficiency in many areas	Users view CCTT as a positive impact on proficiency. Some exceptions: land navigation, ground activities, loader tasks.	
		Generally little negative impact on crew proficiency, some exceptions: Land navigation, out of vehicle activities, loader tasks		
	4.6 What use of TTPs are made by unit leaders in planning a CCTT exercise?	Units rehearse before CCTT exercise	CCTT exercises are rehearsed in the form of OPORD walk through sand map/rock/terrain board drills.	
		Rehearsals are done as OPORD walkthrough, map, rock or terrain board drills		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	Little apparent effort at site level to encourage dialog amongst users (e.g., exchange good ideas)	Little apparent effort at site level to encourage dialog amongst users (e.g., exchange good ideas)	There are no standard mechanisms for sharing lessons learned between units, let alone between posts and the Army as a whole.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	Less than half of battalions report oversight of Co use by Bn Cdr or S3	No regular oversight by either BN or BDE level staffs occurs. CO Cdr oversight of PLT exercises is the norm.	
		Most mentoring of junior officers in context of CCTT exercise is done by Company Commanders		
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	No informal user group mtgs	There are no informal information sharing meetings.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	Yes, AAR is used	Yes. The playback capability in particular provides for a better AAR than possible in the field.	Units find the CCTT AAR capability and simulator fidelity to be the more significant factors contributing to their perception of CCTT's utility and training benefit. Although they cannot quantify it, their professional assessment is that CCTT training does transfer to the field and so they actively use it to prepare as a pre-field training asset. The shortage of simulators prevents it from being used as much at the company level as at the platoon level.
		CCTT AAR's are generally better than those in field because of playback capabilities		
		AAR Feedback is effective		
		AAR process in CCTT provides information useful to plan future training		
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	AVG 3.6 CCTT Fidelity is above average	CCTT simulator fidelity is above average.	
		The realism of CCTT is average or above		
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	AVG 3.9 Training to co. METL standards in CCTT is rated as very good	Training of CO and PLT METL standards in CCTT is rated as very good.	
		AVG 3.9 Training to Plat METL standards in CCTT is rated as very good		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	CCTT training for co tasks transfers well to proficiency in field exercises or combat	All agreed that CCTT training at both the CO and PLT levels transfers over to improved performance in the field, but they do not have the ability to gather the hard data.	
		CCTT training transfers well to plat proficiency in field exercises or combat		
		Co Cdrs believe CCTT transfer of training to field performance can be measured and it will be positive but not sure how.		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	While some users have suggestions for technical changes to CCTT to improve it (e.g., graphics realism), most only cite more access and more simulators	Bottom line: give them more simulators. Most also expressed a desire for more realistic visual graphics.	
	7.6 Upon completion of a CCTT training event, do you leave with a specific plan of action in-mind to correct any observed deficiencies?	CCTT tng results in cdrs leaving with specific plan to fix identified deficiencies	Yes, unit commanders/leaders leave with specific plans to fix identified deficiencies.	

		PL		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.3 Is a training support package available to assist units integrate CCTT into training strategy and plans?	29.3% yes (12-yes 29-no)	While a training support package is available, most PLs are either not aware of them or don't have the time available to use them.	Platoon leaders are not always aware of CCTT site procedures; those that are generally find they facilitate training. Familiarization training by site staff aids in accomplishing objectives. TSP's are not used extensively by Platoon Leaders because they are unaware of their existence or do not have time to use them.
		5 responses; generally time not available		
		2 responses; post on web, better scenarios, more templates		
	1.5 Do prescribed procedures facilitate CCTT usage?	43.9% (18-yes; 23-no)	Yes, prescribed procedures for using CCTT do facilitate usage.	
		18 responses; CCTT operators & hands on training		
		15 responses(36.5%): site and simulator familiarization made planning and executing training easier		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	1-20.5%; 2 - 72.7%; 36.8% - NTC & gunnery prep	Units use CCTT as an additional training resource if time is available.	Yes, CCTT contributes to the combat readiness of using units in the opinion of PLs, and is considered a key event in preparing for NTC rotation or ARTEP. Commanders and their staff visit CCTT events training.
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	63.4% yes (26-yes; 15-no)	Yes, CCTT is considered a key event in preparing for NTC rotation or ARTEP.	
		27 responses (65.9%): Used primarily for NTC and gunnery prep; terrain familiarization, mission rehearsal, night opns, plt movement, plt fire commands; Actions on contact, MOUT Tactics, recon, Plt battle drills, Tank Table VIII & XII		
	2.4 Do commanders and staff visit CCTT events training?		Bn Cdrs and their staff sometimes visit CCTT training, while Co Cdrs do this regular.	
		S3-31.8%; S3 staff-20.5%; S2-=13.6%; XO-15.9%; N/A-182%		
		XO-32.7%; 1SG-23.6%; Other PLs-20.0%; Other PSGs-16.4%; Master Gunner-5.5%; No one-1.8%		
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.2 When in the training development cycle is a CCTT training event planned?	29 responses (70.3%): avg of 4 weeks prior to CCTT use.	A CCTT training event is planned 4 weeks prior to use.	CCTT training events are planned roughly about a month prior to usage.

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.1 Do Co Cdrs plan company level CCTT exercises in addition to scheduled platoon training?	70.7% yes (29 yes; 12no)	Yes, Co Cdrs plan company level exercises in addition to scheduled platoon training.	Yes, PLs consider CCTT a valuable resource, and integrate it into their training strategy as much as possible. Co Cdrs manage, plan, and schedule CCTT training events, and use if to train and mentor their PLs. PLs feel that CCTT usage only has a positive effect on their unit's proficiency.
		36 responses (87.8%): In priority: Co CO requirements, Training Deficiencies, METL assessment, upcoming major training events		
	4.2 Do Platoon Leaders request or arrange to use CCTT site on their own?	1-25.8%; 2-43.5%; 3-24.2%; Master Gnr-1.6%; XO-4.8%	No, the vast majority of PLs do not request or arrange to use the CCTT site on their own.	
		39 responses (95.1%): Vast majority of Platoons rarely or never schelule CCTT training; of the 7 responseding with specific numbers the average was quarterly		
	4.3 Who manages platoon CCTT training exercises? Company exercises?	1-32.7%; 2- 44.9%; 3-22.4%	Yes, Co Cdrs manage and plan CCTT training exercises.	
		37 responses (90.2%): In priority: Co CO directed, METL deficiencies, Next training event		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	4.4 Do Company Commanders use CCTT to mentor and train their Platoon Leaders?	1-2.8%; 2-6.9%; 3-44.3%; 4-37.5% O-8.4%	Yes, Co Cdrs use CCTT to mentor and train their PLs.	
		1-24.5 %; 2-0%; 3-41.5%; 4-22.6%; No one-7.5%		
		1-21.4%; 2-7.1%; 3-44.6%; 4-16.1%; No one-8.9%		
		1-23.0%; 2-8.2%; 3-47.5%; 4-16.4%; No one-1.6%.		
	4.5 Do unit leaders believe that there are effects from using CCTT that have a potential negative impact on individual, crew or unit proficiency?	Provides experience and enhances confidence thru replications w/o LOGPAC detractors; Allows for practice of missions in safe environment under controlled conditions; Allows crews to become decisively engaged in enemy contact w/ maximum feedback from AAR; Permits effective training in movement, gunnery techniques, basic crew tasks, crew & platoon coordination, communication/radio procedures, actions on contact, target acquisition, battle drills, direct fire planning, decision making, and C2.	No, while some PLs stated problems related to the realism of the simulation itself, the vast majority had no answer. Almost all PLs believe that CCTT positively affects individual, crew, and unit proficiency.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
		11 specific responses (26.8%): Loader does not have to load rds (3); Radio problems with sims worse than real (3); indir fire lack of lethally leads to complacency in field; simulator provides false sense of situational awareness; unrealistic driving cond		
	4.6 What use of TTPs are made by unit leaders in planning a CCTT exercise?	60.9% yes (25 yes; 16 no)	Troop Leading Procedures are followed to prepare for CCTT exercises to include terrain, map recons and review of plans & orders.	
		24 responses (58.5%): in priority: OPORDS, Map recons/walk thrus, Terrain boards		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	0.0% yes (0 yes; 41 no)	No, all PLs said sites do not host user meetings to share training ideas and information about best practices.	PLs do not know of any innovative approaches to using the system appropriate for sharing Army-wide. Neither formal nor informal user groups exist to exchange information about training ideas and best practices.
		No responses addressing the right question; responses stated that mtg were on site either right before or after CCTT training		
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	1-11.9%; 2-29.8%; 3-38.1%; PSGs-8.3%; Other NCOs-3.6%; CCTT Site Mgt-7.1%; Bn Staff-1.2%	Assistance with CCTT training for junior leaders vary by unit. Generally Company Cdr and S3 provide mentoring and oversight.	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	2.4% yes (1 yes; 40 no)	No, there are no informal CCTT user groups that exchange best practice ideas within units or on post.	
		1 response: informal CMP internal		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	90.2 yes (37 yes; 4 no)	Yes, the site AAR capability contributes to training effectiveness. The audio and video playback makes the AAR used in CCTT more effective than that in the field.	Users rate AAR as a critical functionality and key factor in achieving effective training with CCTT. Users feel that CCTT fidelity and the task environment are both adequate enough to meet their training needs. Users rate CCTT as effective enough to support positive training transfer. PLs believe increasing the realism of the simulation (i.e. an improvement in picture quality, better communication, and better weapon systems) as the changes that would produce the largest improvement in effectiveness. Upon completion of a CCTT, PLs leave with a specific plan in mind to correct any observed deficiencies.
		37 responses: Differences: CCTT visual aids & playback (67,5%) provides complete and in-depth picture; Similarities: SAME format and verbal sequence		
		Yes 100% yes		
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	3 80.5% yes (33 yes; 8 no)	Yes, CCTT simulator fidelity is adequate enough to meet training needs.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	3	Yes, the task environment provided by CCTT is adequate enough to train to METL standards.	
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	3	Yes, in order to measure training transfer from CCTT to evaluated field exercises or combat, they can do a field vs. CCTT experiment and watch improvement in crew duties.	
		36 responses: Majority said yes, but only two offer ways. Field vs CCTT experiment & watch improvement in crew duties.		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	Change so crew can talk w/cues to center like a real tank; improve 360 degree field of view & loaders vision; full open hatch capabilities for TCs; better picture quality; better ways to ID links; more terrain data bases; more scenarios; fewer cords inside; provide dismount elements; improve graphics/remove gameisms; improve MOUT environment; upgrade system sims to match actual vehicles; more accurate weapons; longer use during the day; more realistic ammo upload procedures; include dismount squad ldrs w/radium & viewing areas to the battlefield	Mostly PLs feel that increasing the realism of the simulation would produce the largest improvement in its effectiveness. A better communication system between units, an improvement in picture quality to better identify objects on the battlefield and increased visibility, and more accurate weapon systems were specifically mentioned the most.	
	7.6 Upon completion of a CCTT training event, do you leave with a specific plan of action in-mind to correct any observed deficiencies?	77.9% yes (28 yes; 8 no; 5 not commenting)	Yes, PLs leave with a specific plan of action in mind to correct observed deficiencies upon completion of a CCTT training event.	

		PSG		
STUDY ISSUES	**SUB ISSUES**	**CONSENSUS ANSWERS**	**SUBISSUE FINDING**	**ISSUE FINDING**
1. Are CCTT Fixed Site facilities being operated in accordance with established PM-CATT policies and prescribed procedures?	1.5 Do prescribed procedures facilitate CCTT usage?	Yes - 100%	Established procedures for using CCTT site facilitate its use.	Platoon Sergeants rate site operations are supportive and easy to follow.
		hands on tng or past experience, and from the CCTT instructors		
		becoming familiar with equipment, better understanding of how system works		
		redundant & repetitive, takes too much time which could be better spent on tng, 10 said none or NA		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
2. Does CCTT contribute to the combat readiness of using units in the opinion of combat arms commanders and staff officers?	2.1 Do units integrate CCTT into their overall strategy or use it as a "filler" activity?	2 - 60%; 1,2 (as response) - 29%	CCTT is used most often as an activity to fill out training schedules and not seldom as integral part of training strategy.	While NCOs believe CCTT is capable of directly contributing to combat readiness, its use is not yet managed as a key event on a recurring basis and use of the site is not regularly monitored in most cases by the chain of command above company level
	2.2 Is CCTT considered a key event in preparing for NTC rotation or ARTEP?	Yes - 74%; but in 1-16INF, 5 out of 8 say NO	Most units include CCTT as part of their training for major live field training including NTC	
		NTC - movement		
	2.4 Do Commanders and Staff visit CCTT events training?	2 - 41%, 1-21%, NA - 24%	Bn leadership and Staff participate in or monitor CCTT training events at company and platoon level less than half of the time. Oversight of Platoon Training by Co leadership is higher but does not appear to approach a level where they monitor and support these events on a regular basis.	
		2 - 41%, NA - 26%		
		S3, BnXO were most popular, rest were scattered and varied. No one and NA accounted for 44%		
		AVG 2.8; 20% had NA		
		AVG 2.5 . 25% had NA - usually same people who responded N/A above.		
		PL, XO, and 1SG were the most popular responses.		
3. How is CCTT training being integrated into overall armored and mechanized unit training strategies and plans?	3.2 When in the training development cycle is a CCTT training event planned?	6 wks to qtrly. Tng schedule also dictates as several responses were right before event	CCTT Training Events are planned a month or more in advance, although in some cases it is put off until the last minute	CCTT Training, once scheduled, are well integrated into overall training and planned

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
4. Do junior officers and non commissioned officer consider CCTT a valuable resource and how do they manage their training time to use it effectively?	4.1 Do Co Cdrs plan company level CCTT exercises in addition to scheduled platoon training?	Yes - 80%	Company level training is conducted using CCTT. Frequency varies considerably by unit with an average of one company exercise every 4 months	Non Commissioned officers consider CCTT a valuable resource. Company level planning for and oversight of CCTT usage is the norm.The time spent using it is planned in detailed in and units prepare for exercises in a similar fashion to preparation for live training. Half of the company commanders are using it as a context for mentoring and teaching subordinates proper TTP's. There is little effort by the chain of command to mentor subordinates on how to make best use of the system, this is primarily left up to site staffs.
		2.5 - pretty evenly distributed; pretty clustered w/ unit - same had high grades, some had low		
	4.2 Do Platoon Leaders request or arrange to use CCTT site on their own?	2 - just under 50%, 1 & 3 - each ~25%	Platoon Training in CCTT is generally scheduled by the Company.	
		either never or hardly ever OR around qtrly		
	4.3 Who manages platoon CCTT training exercises? Company exercises?	2 - mentioned in just under 50%; 1 & 3 even amongst the others	Company Commanders plan platoon-level training in CCTT based on METL tasks, identified training deficiencies and upcoming live training events.	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
		very well or great; movement, maneuvering, realistic scenarios; METL or upcoming training events; some even say they ID weaknesses and work on them		
	4.4 Do Company Commanders use CCTT to mentor and train their Platoon Leaders?	3 - a little over 50%; 4 - 36%; XO, S3, & CCTT staff mentioned as well	Company Commanders in about half of the units a use CCTT as a context for teaching subordinates TTPs, they participate in training and guide Platoon leaders in developing exercises but in most cases rely on site staff or leave platoon leaders to learn on their own how to best use the facility	
		3 - 35%, 1- 27%, 4 - 25%; PSG mentioned a couple times		
		3 - 55%, 1- 20%, 4 - 22%; PSG mentioned a couple times		
		3 - just under 50%, 1 just over 25%, 4 just under 25%		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	4.5 Do unit leaders believe that there are effects from using CCTT that have a potential negative impact on individual, crew or unit proficiency?	positively affects the crew in all positions except leaders. Allows platoons & crew to work as a larger force, get a better feel for movement & fire control, and improves coordination. Gives another source of tng, especially when money, terrain are not available. see last response for quote.	Platoon Sergeants are concerned that CCTT does not replicate the fire control system with the accuracy of a real vehicle. Support for navigation tasks and terrain orientation could be improved. These do not detract significantly from the ability of the simulator to train fire control, movement and coordination within the larger force.	
		mostly problems with the realism of a tank, which they admitted couldn't be simulated. Its hard to see formations, navigation & orientation are hard to do. Cant do dismount training. Fire control system does not come close to the accuracy in real life		
	4.6 What use of TTPs are made by unit leaders in planning a CCTT exercise?	just over 60% Yes	Unit leaders follow similar troop leading procedures as they would for a live exercise or combat prior to beginning CCTT exercise, using terrain boards, overlays and drills to rehearse the planned operation.	
		OPORD was involved in the good majority of answers. They also use terrain boards & map overlays. Rock drill and sand table drill for NTC were mentioned		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
6. Are there innovative approaches to using the system appropriate for sharing Army-wide?	6.1 Do sites host user meetings to share training ideas and information about best practices?	about 2/3 No Everytime, usually before each tng event	Sites do not host any general meetings of users to disseminate info or best practice. They meet individually to assist each unit.	CCTT is used by Close Combat units to train crew and unit collective tasks in accordance with its mission needs statement. There is little effort at unit or installation level to find creative uses or to formally or informally exchange ideas.
	6.2 Do units have a staff officer identified at Bn or Brigade level to oversee CCTT use and assist junior leaders?	3,4 were the most popular answers. PSG were also mentioned.	Battalions and Brigades do not resource or assign an a staff member to oversee CCTT use and assist junior leaders	
	6.3 Are there informal (self organized) CCTT user groups that exchange best practice ideas within units or on post?	Not an single person knew N/A	There are not informal CCTT users groups	

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
7. Other information or indicators to be collected.	7.1 Does the site AAR capability contribute to training effectiveness? How?	85% said Yes	The AAR capability in CCTT contributes to training effectiveness. It is used consistently and the feedback received rated as highly effective. The processes followed are similar to those used during live training but rated as superior because of the playback capabilities. AAR feedback is used as basis for planning future training to remedy identified deficiencies.	1. Users rate AAR as a critical functionality and key factor in achieving effective training with CCTT. 2. CCTT simulator fidelity is rated as acceptable by users and adequate to train collective tasks as designed. 3. Users rate CCTT as highly effective in supporting positive training transfer. 4. Major enhancements to CCTT desired by users are access to site and support for dismounted training and navigation tasks
		Pretty much the same but w/ CCTT you have the capability of video and audio playback - you can see and hear exactly what happened, and show the crew what they did well/ poorly. Indoor environment helps a great deal too.		
		88% said Yes		
		yes, allows you to identify weaknesses, flaws, and build or grow on strengths. Good tool to help learn from your mistakes via sustain/ improve.		
	7.2 Is CCTT simulator fidelity adequate to meet training needs of heavy units?	3.4 - most answers either 3 or 4	Simulator fidelity is rated above average and adequately supports unit training needs.	
		82% said Yes		

STUDY ISSUES	SUB ISSUES	CONSENSUS ANSWERS	SUBISSUE FINDING	ISSUE FINDING
	7.3 Is the task environment provided by CCTT adequate to train to METL standards?	3.7 - most responses were 4, followed by 3	CCTT allows training platoon level collective tasks to standard	
	7.4 Is there any way to measure training transfer from CCTT to evaluated field exercise or combat?	3.6 - most responses were 4 or 3	Platoon Sergeants believe CCTT training transfers well to performance in live training or in combat, measurement is only possible based on observation of task performance in the follow on event.	
		By seeing if the PLT learns from its mistakes. Planning, formations, engagement techniques, and commo are all improved by CCTT		
	7.5 What changes to CCTT would produce the largest improvement in its effectiveness?	more time on CCTT, letting them use it more often. Fix glitches - make it more realistic for both the simulation and the tank environment. Make the capability for dismount infantrymen. Better vision of the battlefield - cant ID things as well as in real life. Navigation dramatically needs to be be improved - possibly a GPS or constant display compass.	Platoon Sergeants would like to have more access (availability) to site facilities, improved support for dismounted training and navigation.	

APPENDIX B
Innovative Uses of CCTT Simulation System Encountered

During the course of this research the Analysis Team had the opportunity to spend time at fixed sites, review training calendars, visit units to conduct interviews and observe actual training events. We observed sites and units developing innovative ways to leverage the capabilities of the CCTT technology, some of them probably not envisioned by the documented system requirements. This annex describes some of those uses that should be of interest to PM-CCTT, ARI and TSM-CATT.

a. Units with other than close combat missions are using the CCTT site to conduct what they believe is effective training. In some cases these are units whose mission directly supports close combat (i.e., engineers) and others whose mission is providing service support.

(1) Engineer units are training in CCTT using Abrams Tank and Bradley IFV simulators that site staff modify in software to operate more functionally similar to their combat vehicles.

(2) Military Police units equipped with machine-gun mounted HMMWV's want to use the system, but there are not sufficient numbers of simulators of this vehicle to train adequately for combat missions. What they do instead is have the site staff qualify their Soldiers on the BFV simulator then use it as a generic simulator emulating the HMMWV. Site staff modify the BFV simulator's weapons capability to limit it to a machine gun similar to what the MP's have available on their organic vehicles. The MP units then conduct tactical operations such as route security in the virtual environment provided by the CCTT system.

(3) Transportation units, to include those in the USAR, have used CCTT to train convoy support operations. Similar to the MP's they qualify their Soldiers on the BFV simulator then use it as a generic platform for emulating their organic vehicles. While the system cannot fully emulate loading and unloading operations and although vehicle performance is limited, these units conducted logistics movement in theater exercises. The 459th Transportation Battalion (USAR) used the NTC database, treating main post Fort Irwin as the port city, the area southwest of post main post as their virtual ocean, had a virtual roll-on/roll-off ship with 400 vehicles off load and escorted them in a simulated convoy using the BFV simulators. They included threat from enemy artillery and air in their scenario. This exercise was featured in the Winter 2002 issue of the 89th Regional Support Command magazine (Jensen, 2002).

b. Gunnery Training in CCTT was the most significant innovative use and interestingly it was being done at both installations. Someone, in one case the installation Master Gunner, designed tank table ranges on the NTC database. These virtual ranges are used to execute simulated range runs. The AAR facility serves as the virtual tower,

expanded to allow idle crews to sit and watch the performance of other crews. Master gunners, supported by the site staff control the simulated range and provide after action review.

c. Preparation for NTC is being done extensively in CCTT, but in addition to honing collective and crew skills, we found units who were adamant that the CCTT NTC terrain database provided them the capability to familiarize their units with the maneuver box and attempted to wargame potential OPFOR actions and test a range of plans and responses. Use in this manner closely approximates mission rehearsal for combat in a virtual world. One unit had used the CCTT SAF facility to evaluate their operations plan, particularly their obstacle plan, by evaluating it in a SAF on SAF mode. They believed that this work on their maneuver plans prior to deploying to NTC made a significant difference in their performance there. This demonstrates that the CCTT technology is capable of supporting operational analysis.

d. One unit we interviewed had just completed a training cycle for all of its companies using an urban operations scenario. We did not get all of the details of how they set up this exercise, but they told us they used the built up areas within the CCTT Terrain Database for mounted urban operations. Although they were limited because of the fidelity of these areas in the TDB (i.e., no buildings can be fired on and damaged, no interior structure, etc), they stated that training offered by CCTT was far better than they could accomplish using the installation MOUT site.

e. One site we visited had opened the site to dependents and on post personnel (civilian employees). Initially we assumed this was a good public relations effort and opportunity to let dependent children play a high quality video game. However, the site management corrected us, their primary motivation for doing this was to allow families and the installation support staff to learn what it is that their sponsors and supported units actually did on the job. The appreciation for the job requirements of a tanker or mounted infantryman gained from this effort was significant.

APPENDIX C

Acronym List

AAR	After Action Review
ARI	Army Research Institute
ARTEP	Army Training Evaluation Program
BDE	Brigade
BFV	Bradley Fighting Vehicle
BN	Battalion
C2	Command and Control
CATT	Combined Army Tactical Trainer
CCTT	Close Combat Tactical Trainer
CDR	Commander
CG	Commanding General
CITT	Commander's Integrated Training Tool
CLS	Contractor Logistics Support
CO	Company
CONUS	Continental United States
CRM	Customer Relationship Management
CSM	Command Sergeant Major
DARPA	Defense Advanced Research Projects Agency
HMMWV	High Mobility Multi-purpose Wheeled Vehicle
METL	Mission Essential Task List
MG	Master Gunner
MOUT	Military Operations on Urban Terrain
MS	Microsoft
NCO	Non Commissioned Officer
NTC	National Training Center
OPFOR	Opposing Forces
OPLAN	Operations Plan
OPTEMPO	Operating Tempo
PL	Platoon Leader
PM	Program Manager
PM-CATT	Program Manager Combined Arms Tactical Trainer
PSG	Platoon Sergeant
SAF	Semi Automated Forces
SIMNET	Simulation Networking
SOPs	Standard Operating Procedures
TDB	Terrain Database
TOR	Technical Officers Representation
TRADOC	Training and Doctrine Command
TSM	TRADCO Systems Manager
TSM-CATT	TRADOC Systems Manager Combined Arms Tactical Trainer
TSP	Training Support Package
TTPs	Tactics, Techniques and Procedures
UCOFT	Unit Conduct of Fire Trainer
USAR	United States Army Reserve
XO	Executive Officer